Differences in Returns to Education: An Analysis of Gender In Indonesia

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DIFFERENCES IN RETURNS TO EDUCATION: AN ANALYSIS OF GENDER IN INDONESIA

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A thesis submitted to Durham University in fulfilment of the requirements for the degree of Doctor of Philosophy in Economics

DURHAM UNIVERSITY BUSINESS SCHOOL
DURHAM UNIVERSITY
2015

ABSTRACT

DIFFERENCES IN RETURNS TO EDUCATION: AN ANALYSIS OF GENDER IN INDONESIA

By Eddy Gunawan

This thesis aims to investigate the earnings differential between males and females in Indonesia. This research also seeks to determine whether the female work force obtains extra benefit in terms of wage earnings on the basis of better education, marital status, working experience, residential location and region. The data used in this study come from the 1989, 1999 and 2009 Indonesian National Labour Force Surveys (SAKERNAS) on households. In order to investigate the gender earnings differential, Oaxaca's (1973) decomposition method is employed. The result shows that the estimated coefficients of education variables are generally higher for females than for males. These results highlight that the effect of education on earnings increases as educational level advances. The return to university education is higher than all other levels of education, whereas sub-primary education has the lowest rate of return to education for male and female workers. The gender gap decomposition results suggest that favouritism towards men exists in the Indonesian labour market. The discrimination component is quite high, which clearly indicates the existence of discrimination in the Indonesian labour market. The results reveal that the degree of discrimination is still quite significant against females in all regions in Indonesia. Among factors that influence gender wage gap and discrimination in the country, education was found to be more important in influencing the earnings of females than males. The returns from education were relatively higher for females in all regions.

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ABBREVIATIONS AND ACRONYMS

ASEAN	Association of Southeast Asian Nations
ASTEK	*Asuransi Sosial Tenaga Kerja,* (Worker Social Security)
APBN	*Anggaran Pendapatan dan Belanja Negara* (Indonesian State Budget)
BOS	*Bantuan Operasional Sekolah* (School Operating Assistance)
BPS	*Badan Pusat Statistik* (Statistics Indonesia)
BSNP	*Badan Standar Nasional Pendidikan* (Board of National Standard of Education)
CIDA	Canada International Development Assistance
CDC	Competency-Based Curriculum
CSIS	Centre for Strategic and International Studies
DAU	*Dana Alokasi Umum* (General Allocation Fund)
DAK	*Dana Alokasi Khusus* (Special Allocation Fund)
DGSE	Directorate General of Secondary Education
DGHE	Directorate General of Higher Education
DIPI_II	Diploma I_II
DIPIII	Diploma III
EEO	Equal Employment Opportunity
FDI	Foreign Direct Investment
GAP	Gender Analysis Pathways
GDP	Gross Domestic Product
GER	Gross Enrolment Ratios
GRDP	Gross Regional Domestic Product
HDI	Human Development Index
HMA10	Household Member Above ten years old
HMB10	Household Member Below ten years old
IDR	Indonesian Rupiah
IFLS	Indonesia Family Life Survey
ILO	International Labour Organization
ISCO	International Standard Classification of Occupation
ISIC	International Standard Industrial Classification
ICSI	Industry Classification in Statistics Indonesia
INPRES	*Instruksi Presiden* (the Instruction of the President)
JAMSOSTEK	*Jaminan Sosial Tenaga Kerja*
JHS	Junior High School
JML	Joint Maximum Likelihood
KTSP	*Kurikulum Tingkat Satuan Pendidikan* (School-Based curriculum)
LDC	Less Developed Countries
LFPR	Labour Force Participation Rate
LFS	Labour Force Survey
LSI	Lesser Sunda Islands
MoEC	Ministry of Education and Culture

MoNE	Ministry of National Education
MoMT	Ministry of Manpower and Transmigration
MoRA	Ministry of Religious Affairs
NER	Net Enrolment Ratios
NLSY	National Longitudinal Survey of Youth
NS	No Schooling
NTB	*Nusa Tenggara Barat* (West Nusa Tenggara)
OECD	Organization for Economic Co-operation and Development
OLS	Ordinary Least Square
PRIM	Primary School
PELITA	*Pembangunan Lima Tahun* (Five Years Development)
REPELITA	*Rencana Pembangunan Lima Tahun* (Five Years Development Plan)
Rp.	*Rupiah* (Indonesian currency unit)
SAKERNAS	*Survei Tenaga Kerja Nasional* (National Labour Force Survey)
SDO	*Subsidi Daerah Autonom* (Subsidy for Autonomous Region)
SHS	Senior High school
SLTA	*Sekolah Lanjutan Atas* (Senior Secondary High School)
SMA	*Sekolah Menengah Atas* (Senior High School)
SMK	*Sekolah Menengah Kejuruan* (Vocational School)
SUB-PRIM	Sub-primary Schooling
SUPAS	*Survei Penduduk Antar Sensus* (Intercensal Population Survey)
SUSENAS	*Survei Sosial Ekonomi Nasional* (National Socioeconomic Survey)
UMR	*Upah Minimum Regional* (Regional Minimum Wage)
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNI	University
UNFPA	United Nations Population Fund
USA	United States of America
USD	United States Dollar
UU	*Undang – Undang* (Law)
VJSH	Vocational Junior High School
VOC	*Vereenigde Oost-Indische Compagnie*
VSHS	Vocational Senior High School
WSS	Worker Social Security

DECLARATION

I hereby declare that the materials contained in this thesis have not been previously submitted for a degree in this or any other university. I further declare that this thesis is solely based on my own research.

Eddy Gunawan

STATEMENT OF COPYRIGHT

Eddy Gunawan

ACKNOWLEDGEMENTS

I am immensely grateful to Allah, the creator and the most merciful, who has shown His greatest blessing by enabling me to complete this work. It is only because of His love that I have been able to face the difficulties and problems that arose during my study. I wish to express my sincere thanks to the following persons who made this thesis possible. I would first like to thank Dr Martin Robson and Professor John Ashworth who together supervised me throughout the course of this research. Dr Robson took a deep interest in the project from the beginning and was very insightful and critical in reviewing the chapters of this thesis. Professor Ashworth always read my work promptly and gave very constructive feedback for further improvement. Thank you for refining my thesis and correcting the linguistic errors that I often made.

I also owe a great deal of thanks and appreciation to the academic and administrative staff of Durham Business School for their support and assistance. Furthermore, I would like to thank all my colleagues studying in Durham for their support during my studies, especially Uda Rifki, Uni Dian, Mas Farid and Uni Rahma for their prayers and willingness to help me finish my thesis, Mas Erwin and Mbak Indah for their keen support in helping me finish my work, and Mas Sigit and Manzoor Ahmed who helped me to work with statistical methods. I also want to thank all of my Malaysian friends, especially Amiruddin Muhamed and family, for the help and support they gave to my family members during my stay in Durham.

I am also grateful to my employer, the Syiah Kuala University in Banda Aceh, Indonesia, for giving me the opportunity to pursue my doctorate program at Durham University. Moreover, I would like to express my thanks for the continuous support and encouragement from the University's Rector, the Dean of the Faculty of Economics, the Head of the Economics Department, and all their administrative and academic colleagues. I am also grateful to Aceh Human Resources Development Institution (LPSDMA) for its financial support.

Finally, I greatly thank my beloved father who passed away in my final year of my study, my late mother, my dear parents-in-law, my sisters and brothers, and all my relatives, too numerous to name individually, for their endless prayers and moral support during my studies. I would like to send very special thanks to Elly Wardani, my beloved wife, for her patience and suffering during my studies in Durham. It was due to her spirit alone that I was able to finish this work. My lovely daughter, Sahira, my little hero, Daniel, and Shareef who was born at the end of my study, your presence in England fortified me and helped me to solve all the problems I encountered during my studies.

DEDICATION

To my late mother for her sacrifice; to my late father for his lifelong support; to my beloved wife, Elly Wardani and to our dear children, Sahira, Daniel and Shareef for their continuous love.

CHAPTER I
INTRODUCTION

1.1 Introduction

Education is seen as an important determinant in a nation's efforts to increase its wealth (Smith, 1776) and people are an important part of the wealth of nations (Schultz, 1961). In labour economics, education is considered an investment in human capital, and it is often more important than investment in non-human capital (Schultz, 1961). Human capital embraces the notion that individuals acquire skills and knowledge to increase their value in the labour market. Experience, training and education are the three main mechanisms for acquiring human capital, with education being primary for the majority of people (Mincer, 1974). Education facilitates the acquisition of new skills and knowledge that help in increasing productivity. This increase in productivity makes resources available to create new technologies, new businesses and more wealth, eventually enhancing economic growth (Smith, 1776).

Since the beginning of modern economics, education has been considered an essential value in increasing the wealth of a nation (Smith, 1776). Plato said that education has high value in an economy; therefore a large part of the community's wealth should be invested in it (Kneller, 1968). Plato went on to argue that education is the right of all people; hence, education is often considered a basic human right. Therefore, to a certain extent, education should be freely available to everyone. Nowadays, most countries provide free basic education to all their citizens. In almost all human societies, human resources are valued as an important asset. Thus, they have become the main factor in economies' efforts to achieve sustainable economic growth, development and social welfare (Barro, 2001). Human resources can be achieved through formal education, and

vocational and professional training (Mincer, 1974). Formal education usually starts from primary school and continues up to university level. Generally, formal education contributes significantly to economic growth and development (Psacharopoulos, 1981 and Barro, 2001). Higher levels of education, training and skills create human capital, significantly raise personal income, and enhance national economic growth. There is a consensus among economists such as Smith (1776), Mincer and Becker (1974) that formal education is an important determinant of individuals' earnings as well as economic growth. Therefore, increasing workers' years of schooling, training and experience has a considerable impact on people's earnings.

Since the late 1950s, various scholars and economists such as Mincer, Becker, Schultz, Blinder and Oaxaca have made serious attempts to determine the return to education. Likewise, the importance of investment in human capital and its effect on earnings has gained in importance since the 1960s. Since the seminal lecture by Schultz in 1961 on the topic of 'Investment in Human Capital' delivered to the American Economic Association, this field has become more interesting to economists. Blaug (1987), for example, took an interest after reading Schultz's paper. Schultz (1961), one of the pioneers in this field, considered investment in human capital to be more important than physical investment, including factory buildings and employee housing, machinery and equipment, and inventories (raw materials, semi-finished goods and finished goods). According to Schultz, investment in human capital can be measured by the increase in national output that results from productivity of the land, longer working hours and more efficient use of physical capital. The differences in human capital occur because of people's increased skill and knowledge. Therefore, investment in this sector is considered a potential element of the wealth of a nation (Schultz, 1960).

Since the 1960s, many researchers have contributed to the large body of knowledge on investment in human capital and the return to education. For example,

Becker (1962, 1964) studied the rate of return to high school and college education in the United States. Mincer (1974) developed the wage earnings function where the number of years of schooling and experience determine the worker's earnings. Similarly, Psacharopoulos (1973, 1981, 1994 and 2004) estimated and compared rates of return to education in developed and developing countries. Behrman and Deolalikar (1991, 1993 and 1995) estimated the rate of return to different levels of education for Indonesian workers and compared the earnings differential between males and females.

1.2 Research Background

In the global economy and the age of information technology, education is a passport to obtain better job opportunities and improved quality of life. The demand for education increases with the further demand for a more capable labour force in the labour market especially in the developing countries (Psacharopoulos, 1981). However, it could be an issue in those countries because modern education systems are still young and illiteracy rates are high compared to developed or highly industrialised nations.

According to the World Bank (2012b), the definition of a developing country is "one in which the majority lives on far less money—with far fewer basic public services—than the population in highly industrialized countries. Five million of the world's 6 billion people live in developing countries where incomes are usually under $2 per day and a significant portion of the population lives in extreme poverty (under $1.25 per day)". Tche country may strongly depend on the agriculture sector rather than non-agricultural jobs, and also suffer from the lack of poor health and education systems (The World Bank, 2012). Meanwhile, a developed nation is a high income country whose Gross National Product (GNP) is $9,266 or more. These countries possess high levels of well-being, public services, and a large stock of physical capital (e.g., buildings, or technical equipments) (World Bank, 2004).

There has been an enormous increase in education, especially for females, since the 1960s. Barro and Lee (2013) report that, over the last 40 years, the average number of years of schooling has increased significantly from 3.86 per cent in 1970 to 7.28 per cent in 2010 for females worldwide. Nonetheless, it is worth pointing out that the increase in labour force skills has caused wage inequality among workers. Juhn et al. (1993), for example, identified that the increase in labour skills has caused wage inequality among workers in the United States for the past two decades. Fulfilling the labour market's demand for people with higher degrees would widen the wage gap among workers much further. Their study showed that the earnings gap between high school graduates and college-educated individuals became much wider. They found that the average weekly wages for the least skilled workers decreased by 5 per cent compared to the highly-skilled workers' earnings, which rose by up to 40 per cent (Murphy and Pierce, 1993).

Psacharopoulos (1985) compared the returns to education of many different countries according to their level of economic development. He found that female worker's primary education has the highest returns to education in those countries with lower per capita incomes. He attributed this to the low cost of primary education and the high productivity differential between people with primary school education and those who are illiterate. Further, he found that the returns to any level of education were highest and lowest in least-developed countries and advanced countries, respectively.

For Indonesia, one of the developing countries, Psacharopoulos (1985) reported a private return of 25.5 per cent for primary school and 15.6 per cent for secondary school graduates. Nine years' compulsory basic education was proclaimed on May 2, 1994; this was strengthened by Indonesian Law[1] (UU No. 20, 2003), which obligated all citizens aged between 7 and 12, to attend basic education consisting of nine years of schooling -

[1] Hereinafter referred to as Undang-Undang (UU)

six years in primary school and three years in junior high school. In response to the education law, the Ministry of National Education (MoNE) on behalf of the government has regulated the compulsory nine years of basic education. The central government and local governments guarantee the implementation of compulsory basic education for every citizen.

According to Statistics Indonesia (BPS, 2012), since the implementation of the nine years of basic education, the illiteracy rate among those aged between 15 and 44 has dropped gradually from 3.88 per cent in 2003 to 1.7 per cent in 2010. Meanwhile, the illiteracy rate among those aged over 45 dropped from 25.43 per cent in 2003 to 18.25 per cent in 2010. This proves that the nine years' compulsory education program has reduced the illiteracy rate of the Indonesian labour force. A growing educated labour force certainly has implications for earnings and job opportunities in the labour market.

The uneven economic growth between regions and unequal distribution of income resulted in the provinces of Java Island receiving a bigger subsidy than areas outside Java (Amri, 2000). The government's failure to resolve the 1997 economic crisis caused the centralized government system ended with Law 22/1999 on regional autonomy and Law 25/1999 on the financial balances between central and local governments (Silver et al. 2001), they were replaced by Law 32/2004 and Law 33/2004. Under the Law No. 22/1999, the central government has delegated most of its discretionary powers, except on justice, monetary law, defence and religious affairs, to district governments. The companion act, Law 25/1999 revamped fiscal relation between the central government and the region alters the transfers received by local governments from the central government. One significant change was that the routine transfer that was largely used to pay the salaries of local civil servants through the Autonomous Region Subsidy (*Subsidi Daerah Otonom,* SDO) has been eliminated; also eliminated are general development transfers known Presidential Instruction (*Instruksi Presiden,*

Inpres) development grants (Brodjonegoro, 2000). These were replaced by a single block grant, known as the General Allocation Fund (*Dana Alokasi Umum*, DAU) whose total amount is specified as at least 25 per cent of central government domestic revenues and whose distribution among local governments is determined by the central government (McLeod, 2000). DAU used to finance development projects in areas such as primary schools, health facilities, water supply , and roads.

Law No. 25/1999 introduces revenue sharing revenue sharing for provincial and district governments, assigning each level of government its share of revenues from taxes on land and buildings, the transfer of land and buildings, forestry, mining, fisheries, oil, and gas (McLeod, 2000). A general allocation fund (DAU), a special autonomy grant for Papua, and a minor special grant facility (*Dana Alokasi Khusus*, DAK) (Hofman et. al, 2006). Other local government sources of revenue for example own source revenues, fees and charges, profits from government enterprises , borrowing are largely unchanged (Alm et al. 2001).

Prior to regional autonomy in 1999, Indonesia's education system, from kindergartens through to universities, had been centralized and directly controlled by the central education authority in Jakarta. However, after Parliament passed Act no. 22/ 1999 on regional autonomy, the education system, from early-age education to upper secondary level, was transferred to local governments.

1.3 Motivation of the Study

It is believed that the labour market requires skilled workers with relevant expertise and experience. Therefore, education has become one of the main determinants of good jobs paying handsome salaries. Education in Indonesia has increased sharply at all levels over the last 30 years; therefore, it is plausible to assume that education will increase the

average income of the Indonesian people. In view of this, our study takes the period before and after the nine-year compulsory basic education program to evaluate the effect of educational level on people's earnings during 1989-2009.

Since the nine-year compulsory basic education program was launched officially in 1994, women's participation at the higher education level has increased sharply. Data from the World Bank (2010a) show that school enrolment for tertiary education increased from 8 per cent in 1995 to 18 per cent in 2007. This will encourage the female labour force to participate in the paid labour market. However, despite the fact that women have equal educational levels and are doing the same jobs as their male counterparts, women seem to earn less than men. This may be due to many factors including differences in gender traits, gender specialization in certain jobs and sex discrimination in the labour market (Deolalikar, 1993). However, this thesis will only focus on skill premium across gender. The reason of not including the type of occupation variables was because of incomplete availability of the data within the scope of years covered in this research.

The motivation of this study is to explore the impact of education on individual incomes. This study explores the influence of education on earnings differentials between males and females and the sources of income differences between men and women and society as a whole. Since 1999, the decentralisation of the education system and fiscal decentralisation has been implemented and certainly would affect regional development and individual earnings.

1.4 The Main Research Gaps

The existing literature covers the theory of human capital and empirical results of the return to education for both developed and developing countries and discusses every

aspect of the subject at great length. However, the current literature fails to discuss several crucial areas of this subject. A review of the existing work on the subject reveals the following gaps.

First, there is limited research in this area in the case of Indonesia; in order to bridge this gap, this study employs the latest National Labour Force Survey Data, when the law stipulating nine years' compulsory basic education was in place.

Second, since the previous research was confined to a particular period, the change and trend in earnings based on educational change was not reported. Our study examines the rate of return to education, the trend and changes of the earnings differential, and gender discrimination in the Indonesian labour market within three decades. It provides strong analysis and comprehensive study in examining the trend in rates of return to education.

Third, the existing literature does not include some of the variables that might be expected to have a deterministic role in workers' earnings; these variables include the presence of children, marital status and the worker's area of residence. In order to fill this gap, this research attempts to identify the percentage changes that took place over the period 1989-2009 in individuals' earnings due to their additional years of schooling. Through this research, we will also determine the pivotal role of education in workers' final earnings. The study will try to identify the best strategy for discouraging or overcoming the gender discrimination issue that exists in the Indonesian labour market and to determine at what level of education (primary, secondary or tertiary) the government should concentrate its efforts to enhance the workers' return.

Fourth, previous studies such as those by Behrman and Deolalikar (1991, 1993 and 1995) used the 1986 Labour Force Survey data, when the nine-year compulsory basic education policy was not in place. Our study is using the latest national labour force survey data when this research is started.

Fifth, to the best of the author's knowledge, no studies have examined the regional rates of return to education based on seven territories of Indonesia region. Previous studies on regional returns to education were carried out by Feridhanusetyawan et al. (2001) and Pirmana (2006) using the Indonesian national labour force survey. The investigation of seven regions in Indonesia expands the existing literature by providing evidence from multi ethnic groups, social-culture and natural resources.

1.5 Research Questions

The major objective of this study is to identify the rates of return to education and to develop an empirical model to explain the earnings differential and gender discrimination. In order to achieve the current research objective, this research has specific research questions to be answered, which are:

1. What is the significance of the relationship between education and earnings?
2. What are the differences of returns of workers who have completed primary, secondary and tertiary education compared to those who have no education?
3. How do female workers potentially benefit from receiving higher education, gaining more experience, residing in urban areas and getting married?
4. Are there any other determinants that might affect the earnings of male and female workers?
5. Does gender discrimination exist in the Indonesian labour market?

1.6 Significant Contributions

This thesis represents a comprehensive study on returns to education, gender discrimination and the earnings differential, and regional earning differentials in the

Indonesian labour market by using current data from National Labour Force Surveys (SAKERNAS) 1989-2009. The first part of the thesis examines the return to education by individual characteristics (i.e., education, experience, marital status, sex, residential area). It also describes the trend of returns to education over the past two decades. The second part provides analysis of the gender discrimination and earnings differentials within the Indonesian labour market. Further, regional earnings disparities and gender discrimination will also be included in this part.

There are several contributions of this research study to the existing literature. First, this research attempts to identify the rate of returns to education for both males and females. I will also seek to determine the role of education in workers' final earnings, and analyse the impact of education, experience, residential location and other individual characteristics on their returns.

Second, this thesis evaluates the rates of return and earnings differentials on all regions in Indonesian. As an archipelago country, each region has its own unique territorial characteristics such as natural resources, human capital and development, ethnic groups, social-culture, languages, and religion. These differences may influence on employment sector and individual earnings in each region.

Third, this study identifies the trend of individual earnings over the last two decades (1989- 2009) due to additional years of schooling. The implementation of nine years compulsory basic education in 1994 had caused an increasing number of enrolments in primary and lower secondary schools. It is expected that the policy would have a positive effect on a worker's income level.

Fourth, this thesis will offer strategies to overcome the gender discrimination issues that exist in the Indonesian labour market. The sources of earnings differentials and gender discrimination analysed in this study will assist the policy makers in reducing wage gaps and gender differences in the country.

Fifth, the research indicates at what level of education (primary, secondary or tertiary) the government should concentrate its efforts to enhance the workers' return. Since 1994, the government has focused on nine years compulsory basic education (6 years for primary education plus 3 years for lower secondary education). The analysis will suggest whether in the future the government should pay more attention in upper secondary education, especially vocation school.

Six, this study highlights the importance of education in reducing the regional earnings gap between Java and the Outer Islands. The study also emphasises how unobserved characteristics such as social norms, customs, rights and laws as well as economic institutions contribute in gender discrimination. The policy of the regional autonomy over the fiscal balance depends upon many institutional factors such as democracy, accountability, people's participation, rules of law and equal treatment of all ethnicity, religion and social-cultures. The study argues that these institutional factors hold the key to determines the success or failure in reducing gender discrimination and regional imbalance.

1.7 Structure of the Thesis

This section illustrates the structure and organisation of the current research while providing an overview of its contents. The thesis is organised into ten chapters as follows.

Chapter one is an introductory chapter that presents the background of the study along with the principal motivation behind undertaking the current research. The chapter then identifies the research gaps and underlines the research questions followed by highlighting its importance and contribution of this study.

Chapter two highlights the background of the educational system in Indonesia, focusing on the educational system under three regimes: old order era (1945-1965); new order era (1966-1997); and reformation era (1998-present). It also explains the levels of education and the rate of school enrolment and attainment.

Chapter three presents an overview of the Indonesian labour market: the labour market conditions; the level of labour force education and participation rate; the level of employment and income; the level and rate of unemployment. The nature of employment problems in Indonesia is also discussed in this section. In addition, this chapter will give an outline of the labour market conditions in Indonesia.

Chapter four reviews previous studies related to the three subjects: wages and education; gender discrimination; and the earnings differential. The discussion in this chapter reveals that education strongly affects the wages of both male and female workers. The effect of education on earnings increases as the educational level advances. The impact of gender wage discrimination on final earnings, determined by decomposing the male and female wage differentials, is also discussed from different points of view. This chapter also presents the relationships between studies by highlighting their strengths and weaknesses.

Chapter five explains the methodology employed in this study. This chapter describes how this research is conducted and sets out the variables and their definitions. Furthermore, the description and sources of data, the data collection procedures and analysis are also discussed.

Chapter six presents the results of the empirical findings on the associations between education and wage, and the effect of the individual characteristics, such as residential location, marital status and number of family members, on wages. This chapter also presents the rate of return to education, differences in returns for males and females, and the trend of returns within the study period (1989-2009).

Chapter seven provides the empirical findings of the return to education from a regional perspective. An overview of the regions and their importance are discussed in this chapter. The descriptive statistics of the Indonesian regions indicate that Indonesia is an archipelagic state containing various ethnic groups, cultures and religions, with significant differences in population and natural resources among its regions.

Chapter eight provides the results obtained from the gender decomposition analysis. The descriptive analysis indicates that, despite the recent increase in women's wages, women's average hourly wage is still lower than that of men. The results provide an insight into gender earnings in regard to education. They show that an additional year of schooling increased earnings for females and males during the period 1989-2009. The next section of chapter 8 provides the decomposition of the gender earnings differential, showing that education is one of the most important factors in the narrowing of the gender wage gap.

Chapter nine addresses the gender earnings differential and discrimination from a regional perspective. Finally, chapter ten provides an overall conclusion to the study. The chapter summarizes the findings of the study and highlights the implications, limitations and the recommendations for future research.

1.8 Conclusion

There was an increase in women's participation in education in Indonesia from elementary school to university level, especially after the implementation of the nine-year compulsory basic education program. As their participation in education increased, women's participation in the paid labour market also increased. Although the research on the effects of education in Indonesia is still limited, several studies such as those by Byron and Takahasyi (1989), and Berhman and Deolalikar (1991, 1993 and 1995) found that

education had a greater effect on women's earnings, especially higher education. Meanwhile, Feridhanusetyawan et al. (2001) and Pirmana (2006) found that gender discrimination exists in the Indonesian labour market.

This chapter has provided a brief account of the importance of education, skills and other relevant variables as a passport to enter the labour market. Educational enrolment has undoubtedly increased gradually as the demand for educated labour has increased. It is clear that women's participation in the labour force has increased even though women seem to earn less than men do. In view of the limited research in this area, especially in the case of Indonesia, women's growing participation and gender discrimination in the paid labour market are among the motivations for the study.

This study builds on and extends past research by using a richer and larger dataset which more accurately represents the current and past population of Indonesia and which should produce more representative empirical results. This study employed three datasets: the data are taken from the 1989, 1999 and 2009 National Labour Force Surveys (SAKERNAS) conducted by BPS.

CHAPTER 2

THE EDUCATION SYSTEM IN INDONESIA

2.1 Introduction

Indonesia declared its independence from the Netherlands on 17 August 1945. However, the armed struggle continued until 1949; consequently, the Indonesian National Education system did not start to function properly until after 1949 (Kristiansen and Pratikno, 2006), resulting in a situation where only a small number of students were attending primary and secondary school in the early 1950s. This was mainly due to the long period of colonization, during which there were no school institutions prior to the 1920s. The national education system can be divided into three periods: the first was the Old Order period, under the Sukarno administration between 1950 and 1965; the second period was the New Order period during the Suharto regime between 1965 and 1998; the third period is the reformation period from 1999 to the present day.

This chapter presents a short review of Indonesian education system within three regimes: Old Order period (1945-1965); New Order period (1966-1999); and reformation period (1999-present). The review briefly covers the education system in the country from 1945, when formal education was first implemented, up to the present day, along with details of the total number of students, teachers and schools/institutions. The presentation of these issues is considered of particular importance as background information for the present study. Massive construction of primary school institutions during the New Order era in the 1970s and 1980s, also known as *Sekolah Dasar* INPRES (Primary School Presidential Decree), provided evidence of how an educated labour force affects the labour market in Indonesia. In a later chapter, we will look at the school system in Indonesia from early ages up to university level. The chapter also highlights the trend of

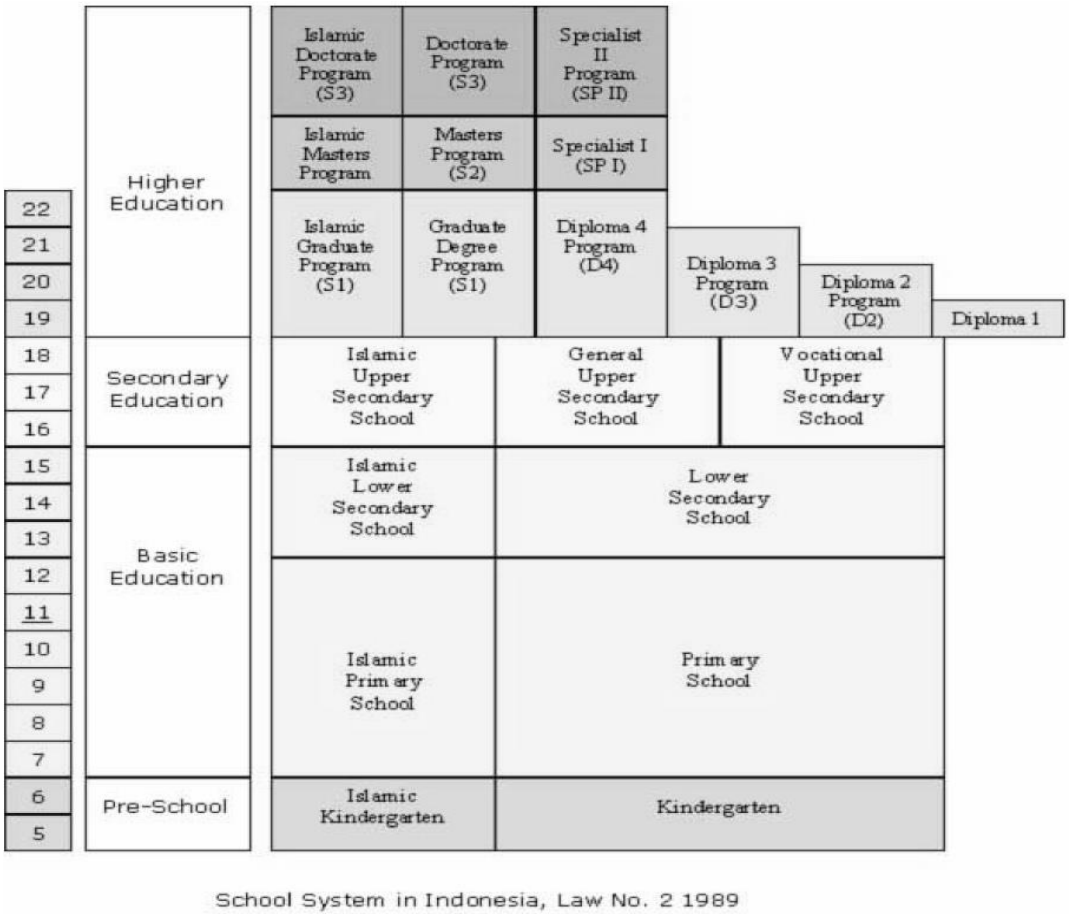
school enrolment within three levels of education that is primary education, secondary education and higher education.

2.2 National Education System

According to the Ministry of National Education (MoNE), Indonesia's current national education system is based on Law no. 20 of 2003, which is an improvement of Law no. 2 of 1989. The Indonesian National Educational system consists of formal education, non-formal education and informal education. Formal education consists of pre-school, basic education, secondary education and higher education. In addition, some other types of education are also provided in Indonesia, including general education, vocational education, academic education, professional education, vocational and technical education, religious education and special education (UNESCO, 2010a).

As shown in Figure 2.2, formal education in Indonesia starts with kindergarten and ends at college. There are two types of educational administration in Indonesia, managed by two ministries: public and private schools, and Christian or Chinese-sponsored schools come under the supervision of the MoNE, whereas religious schools are supervised by the Ministry of Religious Affairs (MoRA). According to Zhao (2006), 85 per cent of school enrolments are under the supervision of the MoNE while the remaining 15 per cent of school enrolments are under the supervision of the MoRA. There is a slight difference between modern Islamic schools and secular schools; the former combine secular and Islamic subjects while the latter emphasize *Pancasila* as the basic principles of the state.

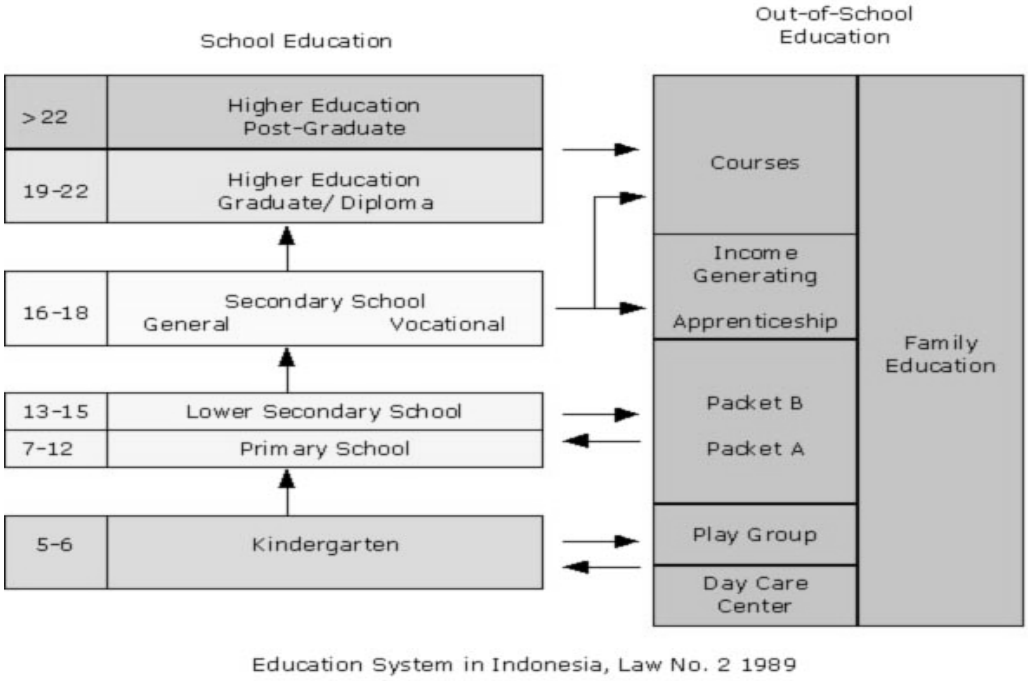
Figure 2. 1: School System in Indonesia



Source*:* Embassy of the Republic of Indonesia in London-United Kingdom (2010)

There is another type of education system in Indonesia, the non-formal education, which is provided to community members who need educational services that can function as a replacement for, or complement/supplement to, formal education with the aim of supporting life-long education. Non-formal education is aimed at developing learners' potentials, with an emphasis on the acquisition of knowledge and functional skills and the development of personality and professional attitudes. Figure 2.2 describes non-formal education which comprises life-skills education, early childhood education, youth education, women's empowerment education, literacy education, vocational training and internship, equivalent programs and other kinds of education aimed at developing learners' ability. Non-formal education consists of training centres, colleges, study groups, community learning centres, and other similar educational units.

Figure 2. 2: Education System in Indonesia



Source*:* Embassy of the Republic of Indonesia in London-United Kingdom (2010)

Training centres and colleges are provided for community members in need of knowledge, competencies and life-skills in order to develop their attitudes, professionalism, work ethics and entrepreneurship. They also provide further education. In 1994, the government introduced the policy of out-of-school education, which emphasized basic education through package A, which is equivalent to primary school, package B, which is equivalent to lower secondary school, and package C, which is equivalent to senior secondary school. This policy helped those students who had dropped out to gain access to an informal education program so that the nine years' basic education target could be achieved.

2.3 Old Order Period (1945-1965)

In the first period, under the government of Sukarno, Indonesia faced many problems including poverty, low level of education, poor infrastructure, and limited numbers of school institutions and teachers (Choy, 1999). In 1950, for example, the total number of pupils enrolled in primary education was 5.3 million, and there were 27 thousand primary schools. By 1960, the number of students had increased to 8.9 million and the number of schools had risen to 37.6 thousand (UN Statistical Yearbook, various issues). It seems that the numbers of schools and pupils both increased, but classroom space was very limited.

Ricklef (1981) described the economic and social problems facing the new state of Indonesia after the Japanese occupation period. One of the most obvious social problems was the size of the population. In 1950, the population was estimated at 77.2 million; by 1955 it had increased to 85.4 million, and according to the 1961 census the population had increased to 97 million. Therefore, although food production increased, it was not enough to adequately supply the growing population. In 1930, 3.8 per cent of the population were classified as urban, but by 1961 the urban population had increased to 8.14 per cent. Jakarta's population had increased sharply, reaching 2.9 million in 1961.

Furthermore, Ricklefs (1981) described how education in this period was the main priority, and the number of educational institutions increased sharply. During the period 1953-1960, total enrolments in primary schools increased from 1.7 million to 2.5 million. Unfortunately, approximately 60 per cent of these children dropped out before completing school (Ricklefs, 1981). Public and private (mostly religious) high schools and universities were scattered throughout the country, especially in Java, and many of the universities had already reached a high standard (Ricklefs, 1981). The term 'high standard' here referred to school infrastructure, facilities and qualified teachers. In this period, under Sukarno's presidency, the government emphasized the importance of

reducing the illiteracy rate. Literacy is defined as the ability to read and write and understand a simple statement related to one's daily life; it often includes basic arithmetic skills as well (UNESCO Institute for Statistics, 2010b). In 1989, the government pushed all citizens towards basic education by establishing the basic education law requiring all citizens to complete basic primary education. However, this plan was not particularly successful, as many parents were reluctant to send their children to school. In addition the schools were small, with little available space and a limited number of teachers. Nevertheless, during this period the literacy rate increased from 20.1 per cent in 1950 to 42.9 per cent in 1961 (Malik, 1994). In addition, Malik demonstrated that, during this period, primary school enrolment increased from 158,787 in 1908 (out of a population of 39 million) to 621,980 in 1919 (out of 49 million). Along with an increase in population, school enrolment rates also increased sharply from 1.47 million in 1930 to 12.3 million in 1968.

2.4 New Order Period (1966-1998)

The second period was the New Order Period, which is commonly referred to as the Suharto regime (1965-1998). Suharto called his administration the New Order to distinguish it from the previous administration, which had been more sympathetic to the Indonesian communist party. Suharto's regime was a capitalist one. After 1965, Indonesia entered a new phase under Suharto's capitalist government, consisting of massive development of school institutions and educational personnel. Although natural resources remained unexploited until Indonesia gained its independence in 1945, oil exploration in Indonesia dates back to 1871. As one of the oil-producing countries, Indonesia benefited greatly from the rise in world oil prices in the 1970s (Kristiansen and Pratikno, 2006); Indonesia built many schools, trained more teachers and provided more secondary and higher education. In 1967, Indonesia had only 282,026 teachers in 51,431 primary schools

(United Nations, 1970)). However, in 1985 Indonesia had 1.18 million primary school teachers in 168,555 primary schools, with a ratio of seven teachers per school (United Nations, 1991). The New Order government achieved significant advances in the fields of education, health and welfare, particularly after 1973 when President Suharto issued a special instruction (INPRES) to build thousands of primary schools.

The opening part of the 1945 Basic Law of the Republic of Indonesia declared that one of the state's goals was the improvement of the nation's intellectual life; to that end, every Indonesian citizen was entitled to an education in accordance with their interests and talents regardless of social status, race, ethnicity, religion and gender. The national education system is based on the state ideology *Pancasila.* It defines five principles as the state's philosophy, which is clearly spelt out in the 1945 Constitution Law. These five principles are as follows: (1) belief in God Almighty; (2) just and civilized humanity, including tolerance of all people; (3) unity of Indonesia; (4) democracy led by the wisdom of deliberation and among the representatives of the people; (5) social justice for all. Thereafter, several efforts were made to improve the nation's intellectual life, marked by Five-Year Development Plans or *Rencana Pembangunan Lima Tahun* (*REPELITA). REPELITA* I lasted from 1969 to 1974, followed by *REPELITA II* (1974-1979), *REPELITA III* (1979-1984), *REPELITA IV* (1984-1989), and *REPELITA V* (1989-1994).

Soedijarto and Moleong (1980, quoted by Zhao, 2006) illustrated that education issues were addressed continuously in the first three Five-Year National Development Plans. The First Five-Year Plan (1969-1973) focused on seven problems of education:

1) Providing enough educational facilities to accommodate the entire school-age population, particularly at the elementary-school level;

2) Redressing the balance of secondary-school enrolments from the present majority of students in general-academic curricula in favour of vocational-training schools;

3) Increasing the percentage of pupils passing from primary to secondary education;

4) Reducing illiteracy among the adult population;

5) Reducing the 50 per cent dropout rate in elementary schools;

6) Increasing the number of qualified teachers;

7) Improving administrative efficiency.

In 1973, during the First Five-year Development Plan, President Suharto issued a special instruction, abbreviated as INPRES, to build thousands of primary schools. According to Duflo (2000), and Sulaiman and Gasim (1998), the government launched the school construction program, known as *Sekolah Dasar* INPRES (SD INPRES), in which more than 61,000 primary schools were built by 1979. The goal of the government was to increase the school enrolment rate among children aged 7-12. A non-formal education program had been proposed in the late 1970s and extended through to 1983 to reduce the number of dropouts and bring them back to school (Cann, 1982). In 1980, the government provided a national budget for the construction of 10,000 more schools, 15,000 new classrooms in existing schools and the refurbishment of 15,000 existing buildings (Zhao, 2006). Table 2.1 shows that the number of primary schools increased rapidly from 65,950 in 1971 to 128,875 in 1980; at the same time, the number of secondary schools increased from 5,293 to 12,361, while the teacher ratio was around 6-9 teachers per school during this period. By 1984, 97 per cent of 7-12 year olds were attending school, compared to 57 per cent in 1973 (Kristiansen and Pratikno, 2006). The enrolment rate had reached 84 per cent for males and 82 per cent for females by the end of 1980. This was considered one of the most successful school expansion programs within developing countries (Duflo, 2000). In the First Five-Year Development Plan, the government wanted to achieve two things. Firstly, it wanted to increase the number of primary school graduates enrolling in secondary school; secondly, it wanted to increase

the number of students enrolling in vocational secondary school in order to meet the labour market demand.

Table 2. 1: Number of Primary and Junior High Schools in Indonesia, 1971-1980.

Year	1971	1972	1973	1974	1975	1980
Primary School	65,950	66,240	66,350	66,944	72,760	128,875
Primary School Teacher	534,800	548,424	556,652	573,061	603,327	787,400
Teacher/School ratio	8	8	8	9	8	6
Junior High School	5,293	5,548	5,485	5,597	5,960	10,516

Sources*:* Zhao (2006); UNESCO (2010b)

Five education policies were achieved during the New Order period (1966-1998). The first was the 1973-1978 school construction programs while the second was the 1973-1984 expansion of junior high schools. Next, initiatives were taken to ensure six years' compulsory elementary schooling in 1984. This was followed by the education law on compulsory education stipulating six years of elementary school plus three years of lower secondary school in 1989. Finally, in 1994 the focus switched officially to compulsory lower secondary school attendance (Kristiansen and Pratikno, 2006). The Asian financial crisis of 1997 delayed the effective imposition of nine years' compulsory basic education[2]. Then, after Law No. 2 of 1989 was amended by Law No. 20 of 2003, the policy of nine years' compulsory basic education was successfully implemented.

2.5 Reformation Period (1999-Present)

The reformation era has provided a large space for the formulation of new education policies that are reformative and revolutionary (Kristiansen and Pratikno,

[2] Among all the Asian countries hit by the crisis, Indonesia was by far the worst affected, economically, politically and socially (Brown, 2003)..

2006). Since 2001, the administration of education in Indonesia has changed dramatically. The education supervision changed from a centralised education system (old order period) becames a decentralized system. In the reformation era, the government is running the 1945 Constitution Law to prioritize education spending budget to at least 20 per cent of the state budget (Toyamah and Usman, 2004).

Based on Law. 22/1999 on local government, which is reinforced by Law no. 25/1999 on financial balance between central and local governments, the managerial and financial responsibilities for all levels of public education have been decentralised from central government, mostly to local government at the district level. There are now 440 districts, representing the third layer of the five-tier government hierarchy (Kristiansen and Pratikno, 2006). Education leads to the development of the local needs, in which diversity is of considerable concern and communities can play an active role in the implementation of the teaching and learning process.

The government introduced the model of "School-Based Management (SBM)" . Means that principals now manage their schools as autonomous units within the national education system, with parents and community members governing schools through representative school committees. School-based management enables the community to be actively involved in preparing school-development plans. School committees can approve the annual budget which is based on the school-development plan, and monitor the management of funds and use of school resources. (Law No. 20/2003)

While in order to provide for qualified human resources, then the government created a system of "Competency-Based Curriculum" (Sulfasyah, 2013). In 2003, the government passed a law No.20/2003 on the national education system to replace Law No. 2/1989, and since then education is understood as a conscious and well-planned effort in creating a learning environment and learning process so that learners will be able to develop their potential for acquiring spiritual and religious strengths, develop self-control,

personality, intelligence, moral and noble character, and skills that one needs for him/herself, for the community, for the nation, and for the state (Law No. 20/2003).

In the reformation era, education has changed dramatically in term of administration, financial support, and education policy from central government to local government. In addition to the benefits of the enactment of the decentralization of education system as mentioned above, however, education has not entirely been successful. Here are some issues that arise are (Zuhdi, 2012): 1) localization of human resources, Hidayat (2011) identify two important issues in terms of human resources that cause of decentralization of education is not run well, the teachers are unprofessional and incompetent officials; 2) lack of regional preparation, Not all areas have the human resources with the same readiness to manage a good education; 3) grade and graduation oriented. The central government seeks to minimize the gap between the quality of education with the implementation of national standards of education and national examinations. For some local governments, the implementation of the national exam is a demand to produce students who have test scores that are above the national minimum scores.

There are some curriculums used during this era (Sulfasyah, 2013):

1. Competency-Based Curriculum (CBC)

The definition of competency-based curriculum used in this study refers to the one stated in the government law regarding the national education system (Law No. 20/2003). A curriculum which is developed based on a set of standardised competencies which specify the knowledge, skills, and attitudes that students should possess at the end of a course of study. In the implementation of this curriculum, students position back in place as a subject in the educational process as it opens up the discussion to acquire the knowledge. Students thus claimed to be active in acquiring information. The teachers'

role is positioned as a facilitator in the acquisition of information using varied approaches and methods. The following key characteristics of CBC are:

1) Emphasizing the achievement of student competencies

2) The curriculum can be expanded, sharpened, and adapted to meet the needs of students

3) Students-centred focus

4) Processes and results oriented

5) Applied multiple approaches and methods of learning

6) Teachers are not the only source of knowledge

7) Lifelong learning

8) Learning how to know

9) Learning how to do

10) Learn to be yourself

11) Learn to live in diversity

2. School-Based Curriculum (SBC)

School-based curriculum or *Kurikulum Tingkat Satuan Pendidikan* (KTSP) refers to curriculum which is prepared and implemented by each level of schooling based on the curriculum framework provided by the government (BSNP, 2006). It was introduced in 2006 and became compulsory across Indonesia in 2009 (Sulfasyah, 2013). The central government set a standard of competence and basic competence, whereas in the case of schools, teachers are required to be able to develop in accordance with the syllabus and assessment of the condition of the school and the district. So an education unit is entitled to organize and develop education syllabus according to the interests of students and the

interests of the environment. SBC is more oriented to the locality of education. Because SBC is based on the implementation of CBC, the students were also given the opportunity to acquire knowledge based on the open system or syllabus set by each school.

2.6 Trend in Education Enrolment

As in many developing countries, Indonesia's gross school enrolment data are commonly available along with net enrolment rate; therefore, in this thesis both net school enrolment rate and gross school enrolment rate are used. Table 2.2 shows the percentage of children in school, represented by Gross Enrolment Ratios (GER) and Net Enrolment Ratios (NER). The GER is the number of children enrolled in schools to the total number of school-age children. The ideal ratio is 100 per cent, but ratios greater than 100 can occur when the number of students at a certain level do not officially participate in the school-age group. The NER provides the number of students in that age group required to be enrolled in schools divided by the number of students in that age group.

Table 2. 2: Primary Education Enrolment

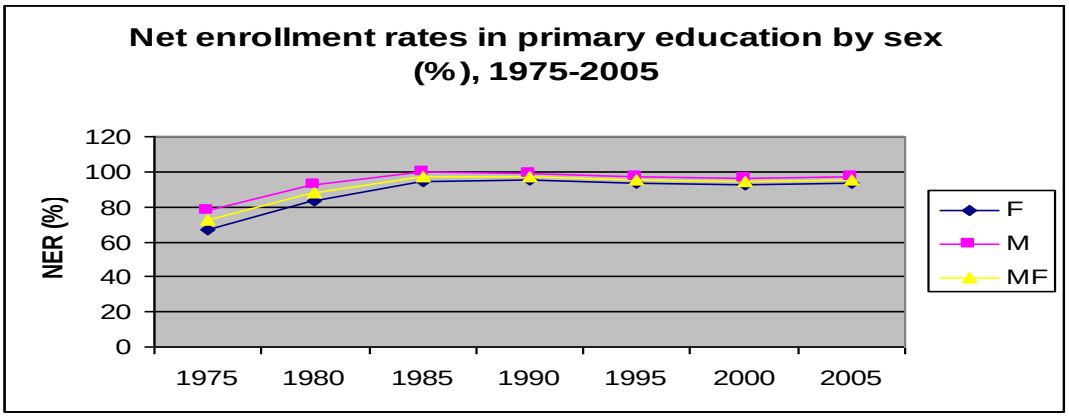
Primary		1970	1975	1980	1985	1990	1995	2000	2005	2007
	Girls enrolment share (percent)	46	45	46	48	n.a.	48	48	48	48
GER (percent)	F	73	78	100	114	113	111	111	116	118
	M	87	94	115	120	116	116	115	120	123
	M+F	80	86	107	117	114	113	113	118	121
	Pupil-teacher ratio	29	29	32	25	23	22	22	20	19
	F	n.a.	67	83	94	95	94	93	94	n.a.
NER (percent)	M	n.a.	78	93	100	99	97	96	97	n.a.
	M+F	n.a.	72	88	97	97	95	94	96	n.a.

Source: World Bank (2010a)

Figure 2.3 describes the trend of education during the period 1975-2005. As the graph clearly shows, in general both male and female students show an increasing trend of enrolment. Since 1975, the net primary school enrolment rate increased from 72 per

cent in 1975 to 97 per cent in 1985. By 2005, the primary school enrolment rate had declined by one percentage point. The figure also shows that the female primary school enrolment share was 45 per cent in 1975, increasing slightly to 48 per cent in 2007.

Figure 2. 3: Primary Education Enrolment



Source: World Bank (2010a)

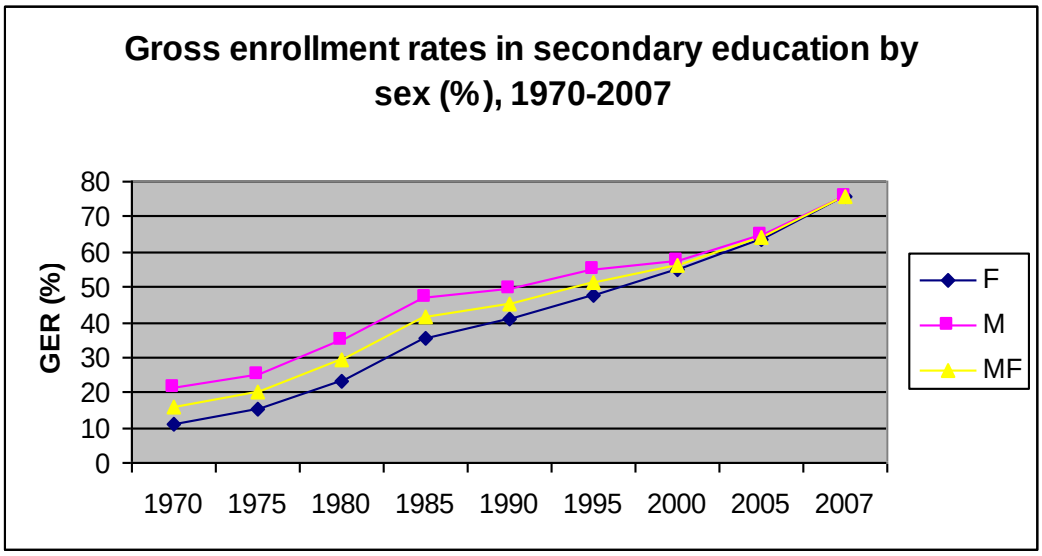
The rate of participation in secondary education increased from 1975 to 1980 and remained constant until 2005, as depicted in Figure 2.4. As the data on the Gross Enrolment Rate (GER) are more readily available, the GER is used to describe the trend of secondary school enrolment. Secondary school enrolment was much lower in 1975. The graph shows that the trend for both boys and girls increased gradually from 16 per cent in 1970 to 76 per cent in 2007.

Table 2. 3: Secondary Education

Secondary		1970	1975	1980	1985	1990	1995	2000	2005	2007
	Girls enrolment share (percent)	34	38	n.a.	n.a.	n.a.	46	48	49	49
	F	11	15	23	35	41	48	55	64	76
GER (percent)	M	21	25	35	47	50	55	58	65	76
	MF	16	20	29	41	45	51	56	64	76
	Student/Teacher Ratio	n.a.	n.a.	15	15		14	16	n.a.	n.a.
	F	n.a.	14	n.a.	n.a.	37	n.a.	48	59	70
NER (percent)	M	n.a.	21	n.a.	n.a.	42	n.a.	51	60	69
	M+F	n.a.	17	n.a.	n.a.	39	n.a.	50	59	70

Source: World Bank (2010a)

Figure 2. 4: Secondary Education Enrolment



Source: World Bank (2010a)

The percentage of girls' enrolment increased during the same period from 34 per cent in 1970 to 49 per cent 2007. There are three main reasons why children enrolling in primary schools do not continue to secondary schools: (1) the low economic status of their parents; (2) the location of their school far from home; and (3) the negative attitudes of their parents towards schooling (Jones and Hagul, 2001; Suryadarma 2006).

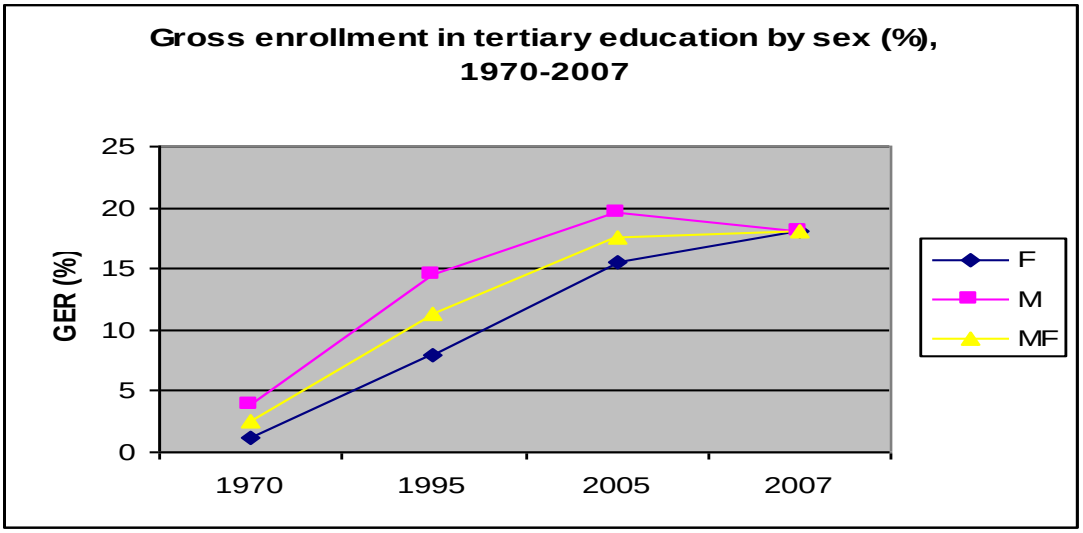
The third stage of formal education is college or university, which is generally considered the most expensive level of education. Many high school graduates are unable to continue to this stage. Besides being expensive, university education is only provided in cities, unlike primary and secondary schools, which are available almost everywhere. Therefore, not all high school graduates can proceed to this level. Figure 2.4 shows the net enrolment in tertiary education. In 1970, the higher education enrolment rate for men and women was 3 per cent, increasing to 11 per cent in 1995. College participation rate also increased substantially and reached 18 per cent in 2005. However, during the period 2005-2007 the college participation rate of females dropped by 2 per cent. Nonetheless, at the same time, female students' enrolment rate increased by 3 per cent (from 15 per cent to 18 per cent).

Table 2. 4: Tertiary education Enrolment

Tertiary		1970	1975	1980	1985	1990	1995	2000	2005	2007
GER (percent)	F	1	n.a.	n.a.	n.a.	n.a.	8	n.a.	15	18
	M	4	n.a.	n.a.	n.a.	n.a.	15	n.a.	20	18
	M+F	3	2	4	n.a.	9	11	n.a.	18	18
	Student-Instructor Ratio	n.a.	n.a.	n.a.	n.a.	n.a.	12	13	n.a.	n.a.

Source: World Bank (2010a)

Figure 2. 5: Tertiary education



Source : World Bank (2010a)

2.7 Financing of Education in Indonesia

The education system in Indonesia is a very large, highly decentralized system after law 22/1999 on regional autonomy and law 25/1999 on financial balance between central and local government has been implemented in 2001. There are over 500 district governments playing a strong role in managing 59 million students, 330,000 schools and close to 3 million teachers (World Bank, 2013). The managerial and financial responsibilities for all levels of public education have been decentralised from central government, mostly to local government at the district level (Kristiansen and Pratikno, 2006). The Ministry of Education and Culture (MoEC) and the Ministry of Religious

Affairs (MoRA) are main responsible for setting policies and managing the educational system in Indonesia and 85 per cent of school enrolments are under supervision of MoEC (Zhao, 2006). Under both ministries, public and private provision co-exists and receives public support in the form of civil service teachers (at all levels) and direct school grants. While the nine years of basic education (primary and junior secondary) are compulsory and heavily subsidized, household contributions are high in senior secondary education and very high in higher education. This is partly related to the greater reliance on private provision and limited public support for these levels (World Bank, 2013). There more than 90 per cent of public schools cover a majority of enrolment in basic education (Toyamah and Usman, 2004), private provision is more prevalent in senior secondary and higher education.

Education financing mechanism in Indonesia experienced a change in line with the implementation of decentralization and regional autonomy policy. Currently the flow of funds from the centre to the regions is done through the mechanism of equalization funds, particularly through the general allocation fund (DAU) that is 'block grant'. Aside from general allocation, each school also received school operation assistance, *bantuan operasional sekolah* (BOS). The BOS initiated by the Ministry of National Education in 2005, and currently provides grants to 228,000 schools benefiting an estimated 43 million students. In 2012, 8.1 per cent or Rp. 23.5 trillion of the total government education budgets was spent on BOS. The aim of the school grants program, allocated on a per student basis is three-fold; to improve access to and raise the quality of basic education, reduce the financial burden for students and to support school based management reforms. Grants have supported the purchase of goods and services meant to enhance educational quality for example texts and library books, teaching-learning materials, teacher professional development activities, and remedial learning and have reduced the need for schools to seek funds from parents to cover these expenditures especially for secondary

school. As BOS expanded, the Ministry recognised that even the substantial resources provided by BOS could not compensate schools for differences in school operating costs associated with the populations they served and their location. For example, the cost of providing basic education such as supplies and travel costs for teachers) in small, remote and rural schools is often higher than in larger, more urban schools. Some regional governments have attempted to fill the gap between the BOS grant schools receive and their actual operating costs by introducing local school grants (World Bank, 2012c).

The compulsory nine years education is fully subsidised by the government (Law No. 20/2003). The upper secondary one, meanwhile, local regulations governing this issue, however, each region has a different policy. Certain district, Jakarta city for example, they still take some tuition for upper secondary school up to Rp. 350,000 and the enrolment fees up Rp. 6,000,000 (Faizal and Nugroho, 2009). However many region and districts level have started to set up free tuition and any fees related to the school such as West Java region (Siswadi, 2013).

Directorate General of Secondary Education (DGSE) under MoEC has launched the school operational assistance, (*bantuan operasional sekolah*, BOS) to high school level (upper secondary school) in Indonesia to achieve universal secondary education programme on July 2013 (Napitupulu, 2012). High School BOS Programme is expected to help the operational costs of the school and provide affordable and quality education especially for poor students. BOS High School is a government programme for the provision of funds directly to the schools where the amount of grants received by schools is calculated based on the number of students in each school and unit cost (unit cost) assistance. SMA BOS funds are used to help schools meet the non-personnel operating costs of the school. The school is required to liberate (waive fees) or help (discount fee) for poor students from paying school tuition and fees for extracurricular activities of students. School received assistance is calculated based on the number of students per

school. Each student received Rp. 1.000,000 per year (Directorate General of Secondary Education, 2014).

Higher education system is centralized and support is limited to public universities, except in the case of civil service lecturers placed in private universities (World Bank, 2013). As of 2013, the higher education system in Indonesia was made up of approximately 3,813 higher education institutions including 316 public and 3,497 private higher education institutions (World Bank, 2014b) with 5.6 million students, 3.8 million of which were studying in private institutions (Directorate General of Higher Education (DGHE), 2012).

Until the late 1990s, tuition at Indonesian universities was set by the central government. As a consequence of higher education reform, public higher education institutions (HEIs) may now set their own tuition fees. In 1998, legislation was passed that gave a number of universities the right to determine their own tuition levels (Marcucci and Usher, 2012). This right was subsequently extended to all universities in 2003 with the law on national education system (law no. 20/2003). In 2012, law no.12/2012 on higher education reinforce again that universities reserves the right to assign the cost of higher education based on standard unit operating costs. The government sets the standard unit operating costs higher education periodically by considering: a. achievements of the national standards for higher education; b. type of study programmes; and c. region cost index. The standard unit operational costs are also used by the government in allocating budget in the state budget for universities (Law No. 12/2012). Total expenses allocated for each type of higher institutions varied greatly; the cost needed depends on the chosen degree, the study program, the status of HEIs for example private or public run institution), and location (Wicaksono and Friawan, 2011). Private institutions established and operated by foundations that merely manage the revenue from student fees and other contributions (Buchori & Malik, 2004).

Higher education costs borne by parents and students vary greatly and depend on the degree taken, the study programme, and the status of the HEIs and the location of the HEIs. In the academic year 2004–05, for example, the tuition fees carried by the parents and students of first degrees ranged from more than Rp. 300,000 ($133) for the lower public HEIs to Rp. 1 million ($443) for the higher public HEIs[3], while it was about Rp. 4 million ($1773) for private HEIs (Wicaksono and Friawan, 2011). According to Fahmi (2007) a student in a public university normally pays the tuition fees from US$50 to $500 per year. On the other hand, other student from private university has to present between US$500 and US$7,000 per year. This lack of funds argument is promoted by the public universities management to open special or extension programmes to enhance their income.

Until 2012, most of public universities in Indonesia charged tuition fees of more than Rp. 3,087,290 (US$500) per year and the three elite universities, Institute Teknologi Bandung (ITB), Universitas Indonesia (UI) and Universitas Gadjah Mada (UGM), charge much more. Most institutions also charge what is called a development fee. ITB, for example, charges tuition fees of Rp. 6,174,580 (US$1,000) per year plus another Rp. 33,960,190 (US$5,500) for the development fee. Tuition fees at UGM average about Rp. 339,602 (US$55) per semester, but the development fee can be as high as Rp. 61,745,800 (US$10,000) (Marcucci and Usher, 2012).

This high level of expenses would have an adverse effect on students coming from a poor family background in gaining access to higher education which remains an aspiration for majority of students in Indonesia. Whereas only 3.3 per cent of higher

[3] Low public tuition is students who living at home with parents, while high public tuition is students who are living in private accommodation or dormitory. Rupiah converted to US$ by 2004 estimate: $1 = Rp. 2,255)

education students stem from the lowest 20 per cent of income groups, 30.9 per cent come from the highest quintile (Nizam, 2006). To help disadvantaged students, the government works closely with HEIs to provide financial assistance schemes in the form of scholarships. The Higher Education Law No. 12/2012 mandates financial assistance for these students. The Law is pro-poor, stipulating that 20 per cent of the students in higher education should be drawn from the lowest socio-economic quintile of the population. Unlike the current practices of less than 5 per cent of the lowest socio-economic quintile enrolment (World Bank, 2014a).

The government offers three types of scholarship: for student achievement in academic activities; a social safety net scholarship provided by compensation from the oil subsidy reduction; and for student achievement in sport and cultural activities. In principle, all the scholarship schemes are targeted at disadvantaged students (Wicaksono and Friawan, 2011). In 2010, the government spent about Rp. 805 billion (US$ 130.3 million) in student financial support including scholarships for: academically meritorious students; low-income students; postgraduate students; university students at Islamic universities; and lecturers from Rp. 10 million to Rp. 12,5 million (US$1,619 to 2,024) per students in one academic year (Marcucci and Usher, 2012). The BIDIK MISI full scholarships programme implemented by Ministry of Education and Culture (MOEC) in 2010 subsidized 20,000 students. The number of recipients has been increasing in subsequent years. In 2012, there were 90,000 students receiving the full scholarships. While this new effort is laudable, by 2013 BIDIK MISI only provided 140,000 students with full scholarships (World Bank, 2014a). There is also a variety of full and partial scholarships along with private, philanthropic, and regional government schemes that support student low income families.

2.8 Conclusion

After independence following 350 years of colonial domination mainly by the Dutch, the first government of the new Indonesia made a commitment to provide high-quality education to the people of Indonesia. Therefore, a comprehensive national education system was organized at two levels: in-school education (formal education) and out-of-school education (non-formal education). It is worth mentioning that formal education in Indonesia is managed by the MoNE. It is mandatory for all citizens to complete nine years' basic education. Attendance at pre-school education is not a prerequisite for entry into primary school. Basic education includes six years in primary school for children between seven and twelve years of age, and three years in lower secondary school for children aged 13-15. After that, another three years of secondary education is required before students can pursue higher learning in colleges, universities and other institutions.

In addition to the formal schools, Indonesia has also developed a variety of non-formal and informal education programs. Non-formal education is mostly provided at an early age and includes Qur'anic education provided by mosques and Sunday schools, and other religious education provided by Christian missionaries and other religious establishments. Meanwhile, informal education is provided for those who dropped out of school, with the aim of improving community health, encouraging family planning, and training adults in vocational skills.

Since the decentralization of education, the sector has shown a marked improvement in terms of both quantity and quality. Decentralization has given more space for education managers to find a strategy to compete and achieve high-quality output and independence. The decentralization policy has had a significant influence on the development of education, with at least four positive impacts: 1) improved quality, as the school authorities have more flexibility to manage and empower the potential of

available resources; 2) finance efficiency, which can be achieved by utilizing the resources provided by local taxes and reducing operating costs; 3) administrative efficiency, achieved by eliminating lengthy bureaucratic procedures; 4) expansion and equity by providing educational opportunities in rural areas, thus resulting in the expansion and distribution of education.

CHAPTER 3
THE PROFILE OF THE INDONESIAN LABOUR MARKET

3.1 Introduction

The main purpose of this chapter is to provide general information about the Indonesian labour market, including levels of education, employment and unemployment rates, employment prospects and employment preferences among the educated. It also endeavours to describe what constitutes the employment problems and at the same time presents hypotheses regarding its causes.

During the past two decades, Indonesia's labour market has undergone a considerable degree of turbulence and a number of structural changes. These developments were created by important shifts in the industrial and occupational composition of employment, technological change in the workplace, corporate restructuring, and continuing globalization of economic activity. Overall, labour market conditions in the nation have improved markedly over the past ten years but the problem of manpower still exists**,** adversely affecting the progress of development.

3.2 The Structure of the Indonesian Economy

The Indonesian economy encompasses highly capital-intensive technology in both the oil and gas industries and the agricultural sector. Since the 1980s, industrialisation and modernisation have influence Indonesia's labour market, particularly in Java region where women have been drawn into the labour force (Hancock, 2001). When economic growth is the result of industrialisation, export-oriented manufacturing in particular tends to benefit women (Baslevent and Onaran, 2004) and

leads to social modernisation, including greater gender equality[4]. With the change in Indonesia's economic structure, the labour market has become an increasingly important source of income and participation for the growing workforce. Despite these developments, many observers are disturbed by the low wages, poor working conditions and high rates of in-formalisation among Indonesian workers compared with those in more advanced East Asian economies (Manning, 1998). In 2009, the informal sector covered 71 percent of the employed, while women can be found to a larger extent in formal labour at over 72 per cent against 68 per cent for male workers. Up to 95 per cent of informal labourers work in the agricultural sector and more than 52 per cent of all agricultural workers were self-employed, against 29 per cent being family workers (Klaveren, 2010).

Table 3.1 shows that most of the people work in the agricultural sector. In 2010 for example, 37.6 percent of women who worked in the agriculture sector followed by the trade sector at 27 percent, and the social services sector at up to 17 percent. Over the past 6 years, there has been a decline in the number of women working in the agricultural sector from 45 percent in 2004 to 37.6 percent women in 2010. This is due to a reduction in the amount of agricultural land and an increase in the populations of each region of Indonesia. In contrast to the agricultural sector, the social services sector shows an increasing number of women workers with an extra 3.2 percent, followed by the industrial sector that slightly increased by 1.7 percent. Meanwhile, the trade sector, maintained the number of women during the same period.

[4] Export-oriented industries such as textiles, garments, and processed agricultural goods mostly dominated by female workers (World Bank, 2001). These industries are conduit for new female workers due to the jobs require little training and few specialized skills; they do not need workers with great physical strength; and making cloth and clothing is often perceived as traditional women's work (Ross, 2008)

Table 3. 1: Percentage of Population 15 Years and Over Who Worked According to Main Employment

Main Employment	2004		2009		2010	
	Male	Female	Male	Female	Male	Female
Agriculture, Forestry, Hunting and Fishing	43	45	41	41	38.8	37.60
Mining and Quarrying	1.43	0.5	1.53	0.37	1.64	0.37
Processing Industry	11	13	11	13	11.6	14.72
Electricity, Gas, and Water	0.34	0.06	0.31	0.03	0.31	0.05
Construction	7.31	0.34	6.96	0.30	8.09	0.34
Wholesale, Retail, Restaurant and Hotel	17	27	16	28	16.9	27.22
Transport, Storage and Communication	9	0.59	8	1.99	7.62	1.18
Finance, Insurance and Business Services	1.39	0.89	1.64	1.06	1.82	1.25
Community, Social and Personal	10	13	13	14	13.2	17.26
Total	100	100	100	100	100	100

Source: BPS (2011)

Although agriculture remains the largest employer in the Indonesia labour market, a growing number of women earn their income from work outside this sector[5]. In addition to the agricultural sector, many women in Indonesia, especially in urban areas, worked as salespersons and in service sectors such as banking, tourism and hospitality. These changes have occurred due to a shift in social values ranging from women's rising educational levels and the changing age of marriage[6], to a change in the mind-set of society towards women and government regulations in favour of equal rights in employment opportunities between male workers and women (Utrech and Sayogyo, 1994). According to the Human Development Report, women in Indonesia have certainly made progress in terms of employment. Women's labour force participation rate, which was around 36.2 per cent before the financial crisis in 1998, rose to 37.2 per cent in 1999

[5] Many women work in the manufacturing sector in the urban areas and send the remittances to their parents (Silvey and Elmhirst, 2003).

[6] The changing age of marriage is the trend toward later marriage is associated with important social and economic implications such as changing roles for women, with increased opportunities for education and labour force (Greenspan, 1992).

and to 37.5 per cent in 2002. Women's share of non-agriculture wage employment increased from 28 per cent in 1997 to 38 per cent in 1998, although after the financial crisis in 2002 the ratio had fallen to 28 per cent (BPS, Bappenas and UNDP, 2004). This remarkable shift of wage employment is due to the expansion of employment opportunities in the services sector and increased female education. Therefore, over the last six years, the average growth of female entering the labour market is much higher than men.

3.3 Labour Market Conditions

The population of Indonesia now exceeds 230 million, and the active labour force constitutes approximately 100 million or around 43 per cent of the total population (2010 Population Census – Statistics Indonesia). The percentage share of young people aged under 25 in the labour force has decreased from 16 per cent in 2003 to 14 per cent in 2010 (Statistics Indonesia – Social Economy Report 2007-2010). However, it is important to mention that many people are not fully employed because they work for less than 35 hours a week (see details in Table 3.8). In developing countries such as Indonesia, waged employment is only a part, sometimes a small part, of the labour market; self-employed and family workers are commonly considered part of the informal sector, accounting for a significant proportion of the Indonesian workforce (Alisjahbana and Manning, 2006)[7].

In the last two decades, Indonesia has experienced a rapid economic and social transformation that has affected the structure of the labour force and its supply and demand. Particularly during the period 1989-1996, the country had one of the fastest growing economies in Asia, with an average annual real growth rate of more than six per

[7] After the 1997 financial crisis, many workers were pushed into self-employment (Mehta and Sun, 2013).

cent. Due to this spectacular performance, Indonesia has been transformed from a low-income to a middle-income country (World Bank, 2012b). However, the economic boom in Indonesia, as in many South East Asian countries, was halted due to a severe economic and financial crisis that hit the region in 1997 (Mehta and Sun, 2013).

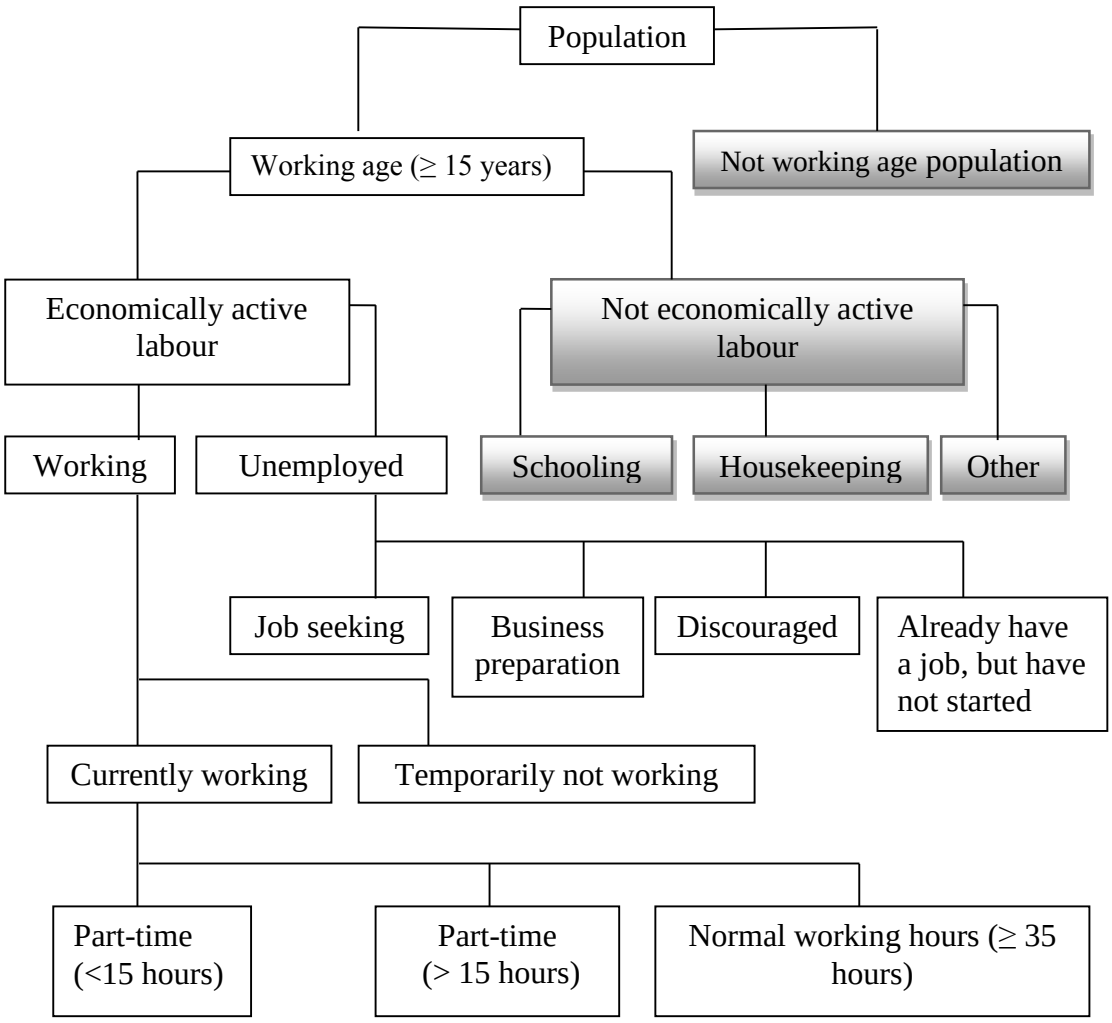
Measurement of employment in Indonesia is performed by *Badan Pusat Statistik* (BPS)[8] or Statistics Indonesia, as shown in Figure 3.1. BPS divides the population into two groups: working-age population (those aged 15 years and over) and non-working-age population. The working-age population is classified into two categories: not in the labour force and in the labour force. The labour force population lies in the working-age group, which contains those who are actively working and those who are able to work but are unable to find suitable jobs.

The concept of 'working' means activity intended to earn an income by doing work or helping to do work for at least one hour continuously during the reference week (including unpaid family worker/s participating in any economic activity, Statistical Yearbook of Indonesia 2010 and ILO, 2012). Income or benefits include wages, salaries, income, allowances and bonuses for workers/employees, and results of operations such as rent, interest and profit, in the form of money or goods for entrepreneurs.

The population included in the category of the unemployed are those who are looking for jobs, those who intend to launch businesses, those who have given up seeking jobs because they seem impossible to find (hopeless) and those who already have jobs but have not mentioned the fact. Meanwhile, the population comprising the non-economically active labour force are students, those engaged in school or household activities, and others.

[8] Hereinafter referred to as BPS.

Figure 3. 1: Employment Diagram



Source: BPS (2008)

Table 3.2 shows that the working-age population during the period 2005-2010 has increased from 158 million to 172 million. The composition of the Indonesian labour force continues to change in line with the on-going demographic processes. Table 3.2 indicates that in 2005, from a working-age population of 158,49 million (Population age 15+), the size of the labour force reached 105,85 million or 66.8 per cent of the working-age population, while in 2010, from a working-age population of 172,07 million the workforce has reached 116,527 million or 67.72 per cent of the working-age population. Overall, the working-age population has increased by 13,579 million during the period 2005-2010.

Table 3. 2: Population 15 years of Age and Over by Type of Activity

Category	2005	2006	2007	2008	2009	2010
Population age 15+	158,491,396	160,811,498	164,118,323	166,641,050	169,328,210	172,070,000
Economically Active	105,857,653	106,388,935	109,941,359	111,947,260	113,833,280	116,527,550
	(66.8)	(66.2)	(67.0)	(67.18)	(67.32)	(67.72)
1 Working	93,958,387	95,456,935	99,930,217	102,552,750	104,870,660	108,207,770
	(88.8)	(89.7)	(90.0)	(91.61)	(92.13)	(92.86)
2 Unemployment	11,899,266	10,932,000	10,011,142	9,394,520	8,962,620	8,319,780
	(11.2)	(10.3)	(9.1)	(8.39)	(7.87)	(7.14)
Not economically active	52,633,743	54,422,563	54,176,964	54,693,790	55,494,930	55,542,790
	(33.2)	(33.8)	(33.0)	(32.4)	(32.8)	(32.3)

Source : BPS (2008)
Note : Percentages in parentheses

Along with the increase in the size of the labour force, the labour force participation rate (LFPR) during the period 2005-2010 has also increased, from 88.8 per cent to 92.86 per cent. This shows that the proportion of the working-age population who are economically active during this period was above 80 per cent. The increase in the LFPR, as we will show later in this thesis, is partly due to the better quality of human resources and the increasing number of women participating in the active labour force.

3.4 Characteristics of the Indonesian Labour Force

3.4.1 Labour Force by Age Group

Table 3.3 shows the labour force participants aged between 15 and 65 years. The total labour force is divided into three main categories. The first is the age group ranging from 15 to 24 years. This group accounted for 16 per cent in 2009, dropping slightly to 14.6 per cent in 2010. The second group consists of those aged between 25 and 54, which remained constant at 71 per cent from 2003 until 2010. This group is considered the golden age of the labour force, as the top career employees lie in this group. As for the

third group, the data show that those aged over 55 supply less labour to the labour market (Alisjahbana and Manning, 2006). This phenomenon is the result of health conditions, poor nutrition and lack of medical care. The age structure of the Indonesia population is changing from a young structure to an intermediate structure.

In the analysis of employment, the working population can be divided according to age groups. The goal is to determine the contribution of young workers, middle-aged workers and older workers to the labour market. Table 3.2 shows that the majority of the labour force is aged between 25 and 54. However, young and older workers make a significant contribution to the labour market. This may be due to a sense of responsibility for the family, the need for socialization, and public recognition.

Table 3. 3: Labour Force by Age Groups

Age groups	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
15-19	5.0	5.3	4.8	5.0	5.7	5.7	5.7	5.1
20-24	11.2	10.6	11.0	11.2	11.2	10.4	10.4	9.5
total 15-24	**16.2**	**15.9**	**15.8**	**16.2**	**16.9**	**16.1**	**16.1**	**14.6**
25-29	13.5	12.8	13.1	13.2	12.8	13.3	13.3	13.3
30-34	14.3	13.8	13.4	13.6	13.0	13.3	13.3	14.0
35-39	13.7	13.7	13.7	13.1	12.9	13.0	13.0	13.0
40-44	12.3	12.4	12.3	12.0	12.2	11.8	11.8	12.4
45-49	9.8	10.1	10.6	10.4	10.4	10.4	10.4	10.3
50-54	7.8	8.1	8.0	7.9	8.0	8.4	8.4	8.6
Total 25-54	**71.4**	**70.9**	**71.1**	**70.2**	**69.3**	**70.2**	**70.2**	**71.6**
55-59	4.6	4.8	5.3	5.5	5.5	3.6	5.5	5.8
60+	7.8	8.2	7.8	8.1	8.3	4.6	3.6	3.6
Total 55+	**12.4**	**13.0**	**13.1**	**13.6**	**13.8**	**13.6**	**13.6**	13.8

Source: BPS (2008)

Further, Table 3.3 shows the distribution of working population by age group. During the period 2003-2007, the majority of the working population was aged between 25 and 54 (prime age) at a steadily decreasing percentage, while young people (15-19 year-olds) who worked during the period 2003-2007 accounted for between 15.8 per cent and 16.9 per cent at fluctuating rates. Younger workers also include those still in school. The percentage share of elderly (55 years and above) people in the labour force ranges

from 12.4 per cent to 13.8 percent. Old-age workers include those who have 'retired' but are still working.

3.4.2 Labour Force by Level of Education

Education is one of the factors that affect the quality of human resources. Education is also one of a country's progress indicators, particularly for social development (Boresnstein et.al., 1998). People attaining higher levels of education expect to have better jobs and earn higher wages than workers with lower educational qualifications (Kaboski and Logan, 2011). Generally, the education of the labour force has improved during the period 2000-2008, largely as a result of the increasing share of secondary education and above.

During the period 2000-2008, primary school level is the most populated category for the male and female labour force. In 2008, the proportion of males with primary school education was slightly higher, at 54.6 per cent, than that of females, at 51.6 per cent. At the secondary level, the male labour force also dominated. Conversely, the percentage of the female labour force with tertiary education is higher, at 8.6 per cent than that of the male labour force, at 7.1 per cent.

Table 3. 4: Percentage of Labour Force with Level of Education

Year	Primary Education			Secondary Education			Tertiary Education		
	Female	Male	Total	Female	Male	Total	Female	Male	Total
2000	51.0	55.4	53.2	16.0	22.2	19.4	4.7	4.8	4.6
2001	51.1	55.4	53.2	15.7	21.5	19.0	5.1	5.0	5.0
2002	51.6	56.2	54.0	15.9	21.6	19.2	5.2	4.8	4.9
2003	56.1	59.4	57.7	16.5	22.6	20.0	4.7	4.6	4.5
2004	55.0	58.2	56.4	16.9	22.7	20.2	5.7	5.2	5.3
2005	55.6	59.6	57.6	17.9	22.9	20.7	6.4	5.3	5.6
2006	53.3	56.8	55.1	19.1	24.1	21.9	7.4	5.6	6.2
2007	53.9	57.5	55.7	18.0	22.7	20.6	7.9	5.9	6.5
2008	51.6	54.6	53.5	19.0	24.3	22.3	8.6	6.2	7.1

Source: World Bank (2012a)

According to the World Bank (2012a) data for the period 2000-2008, more than half of the working population was educated to primary school level, with just a slight rise from 53.2 per cent to 53.5 per cent. The total labour force, both male and female, educated at secondary level shows a gradual increase from 19 per cent in 2000 to 22.3 per cent in 2008. The nine years' compulsory basic education program launched by the government has not been fully realized. It can be seen that the percentage of the labour force with only an elementary education is still high. However, the improving quality of the labour force is also indicated by the increase in the number of highly educated people; in particular, the proportion of the labour force with college qualifications has increased from 4.6 per cent in 2000 to 7.1 per cent in 2008. Percentages of females educated at primary and secondary levels are lower than those of men. This suggests that women' level of education is still lower than that of men. However, at the tertiary level, the percentage of women is greater than that of men.

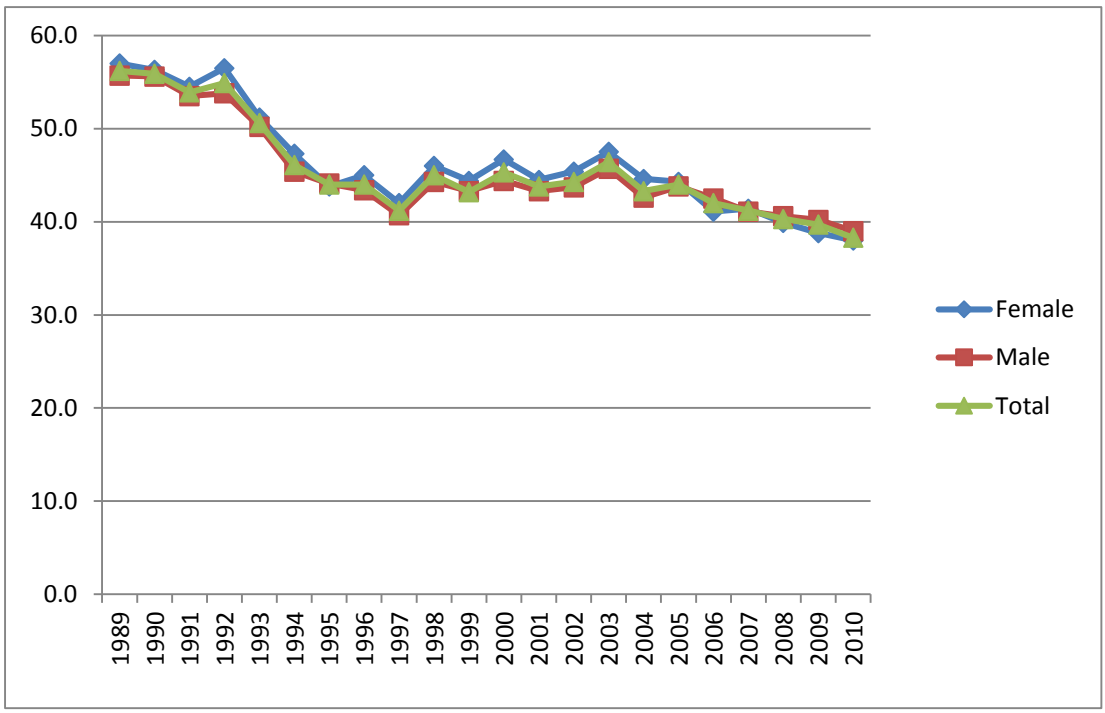
3.4.3 Labour Force by Main Employment

Industry Classification in Statistics Indonesia (ICSI) consists of nine categories. However, in this section the main employment of the labour force is grouped into three main industries. The first is the agricultural sector consisting of agriculture, hunting, forestry and fisheries. The second is the industrial sector consisting of mining and quarrying, manufacturing, electricity, gas and water, and construction. The third is the service sector consisting of everything apart from agriculture and industry (BPS, 2008).

Figure 3.2 shows that the majority of the population in Indonesia relies on the agriculture sector, especially in rural areas. In 1989, the percentage of the total population working in the agricultural sector had reached 56.2 per cent, but this proportion continued to decline, reaching 38.30 per cent in 2010. The number of workers in the agricultural

sector has declined because this sector is less attractive, has the lowest value addition, and has weak competitiveness. No significant differences are found between males and females employed in this sector.

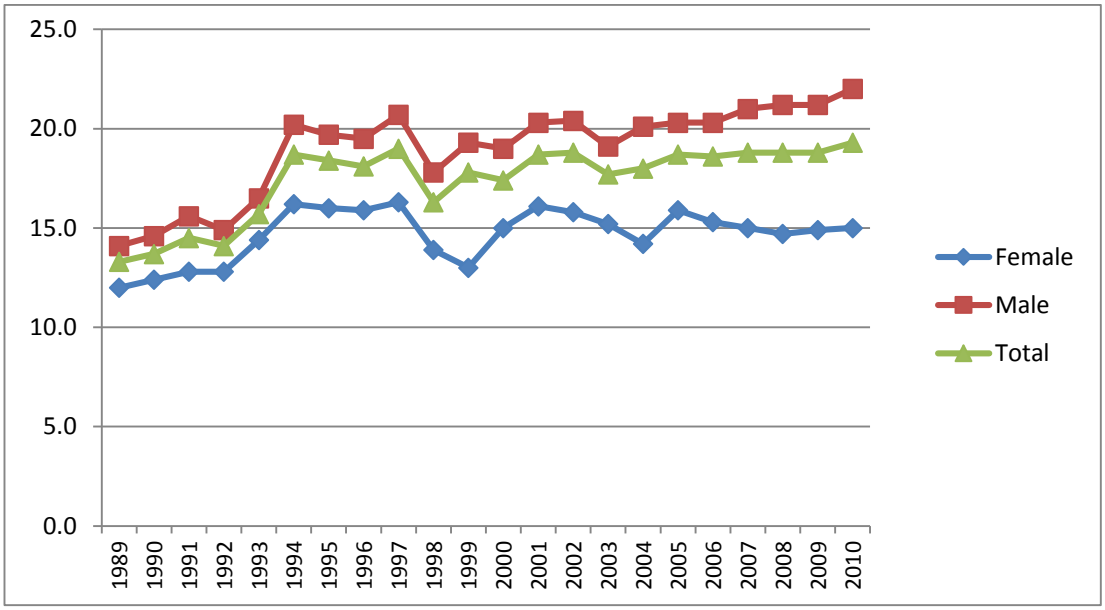
Figure 3. 2: Percentage of Employment in Agricultural Sector



Source: World Bank (2012a)

Meanwhile, the industrial sector has continued to grow during the same period of 1989-2010. However, it could provide only 13.3 per cent of total employment in 1989, increasing to 19.3 per cent in 2010. In contrast to the agricultural sector, the proportion of male workers in this sector is slightly higher than that of female workers. This is understandable since the agriculture sector is not greatly preferred by women. 2009 Indonesian labour force survey provides some evidences that only 9.1 per cent of women work in agricultural sector compared to their counterpart at 15.1 per cent (BPS, 2009).

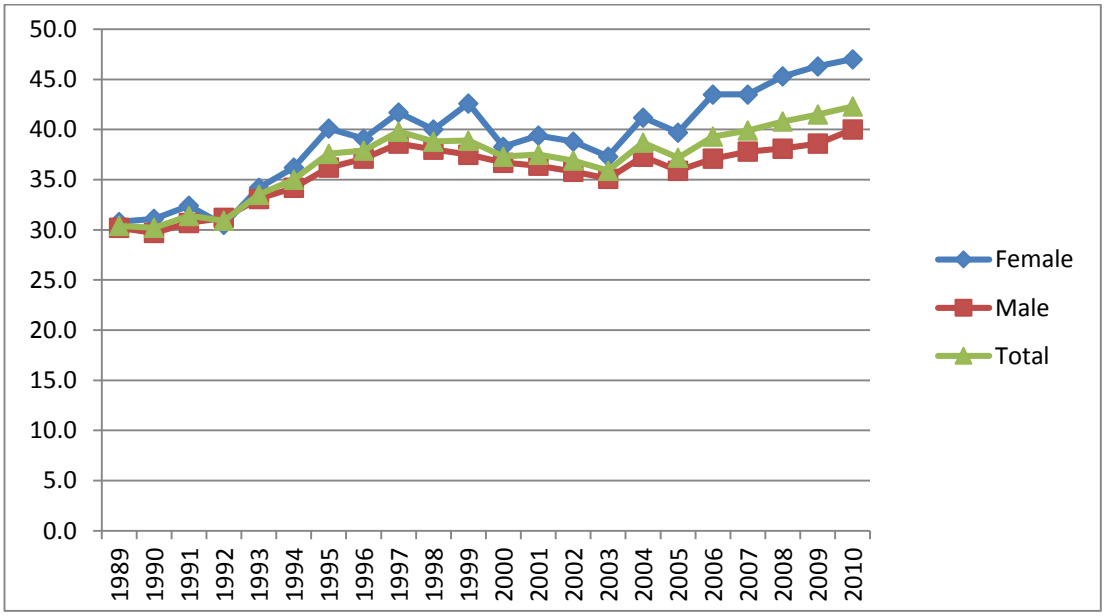
Figure 3. 3: Percentage of Employment in Industry Sector



Source: World Bank (2012a)

The contribution of the service sector to total employment was 30.4 per cent in 1989, increasing to 42.3 in 2010. Figure 3.4 also draws attention to the fact that female employees' share of service sector employment is greater than that of their male counterparts, while the male labour force dominates in the industry sector. In the service sector, women mostly dominate in the public services, finance and public health.

Figure 3. 4: Percentage of Employment in Service Sector



Source: World Bank (2012a)

3.4.4 Labour Force by Residential Location

Indonesia is an agricultural country in which the rural population is bigger than the urban one. Towards the end of 2010, 50 per cent of the Indonesian population were living in rural areas, where they were still struggling with several issues (Data Centres and Employment Information, 2013). The social economy of the rural population is still far below that of the urban population. In 2010, up to 58.9 per cent of the rural population was working in the agricultural sector.

There are some basic problems afflicting the rural population in Indonesia, including low labour productivity, low school participation rate, limited agricultural land, low income of farmer households and land conversion from agricultural to non-agricultural sectors. The majority of the rural population is working in the agricultural sector, where the average amount of land owned per household has declined. In addition, the fragmentation of land and the conversion of agricultural land to non-agricultural uses have reduced the amount of land available to rural dwellers. Another issue for the rural population is low labour productivity; this problem can be seen from total labour force absorbed in the agricultural sector and the contribution of the agricultural sector to the national economy.

In contrast, during the period 2008-2010 most urban dwellers were working in the service and trade sector. This is because the Indonesian economic structure has changed and shifted to the industrial sector, which has the capacity to absorb more labour. During the period 2008-2010, in addition to the industrial and trade sectors, the construction and personal services sectors have also begun to grow. In rural areas, the majority of labourers work in the agricultural sector.

Table 3. 5: Labour Force by Residential Area.

Main Industry	2008			2009			2010		
	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total
Agriculture, Hunting, Forestry and Fishing	10.4	61.3	40.3	10.6	60.1	39.7	9.5	58.9	38.3
Mining and Quarrying	0.1	0.1	0.1	0.8	1.3	1.1	0.9	1.4	1.2
Manufacturing	17.3	8.7	12.2	17.1	8.8	12.2	17.8	9.2	12.8
Electricity, Gas and Water	0.3	0.1	0.2	0.4	0.1	0.2	0.4	0.1	0.2
Construction	6.2	4.7	5.3	6.2	4.6	5.2	6.2	4.4	5.2
Wholesale, Retail Trade, Restaurant and Hotels	31.5	13.1	20.7	31.4	13.6	20.9	31.2	13.4	20.8
Transport, Storage and Communication	9.1	3.9	6.0	8.9	3.7	5.8	7.7	3.4	5.2
Financing, Insurance, Real Estate and Business Services	2.9	0.4	1.4	2.9	0.4	1.4	3.2	0.5	1.6
Community, Social and Personal Services	21.5	6.7	12.8	21.8	7.4	13.4	23.1	8.8	14.7

Source: MoMT (2013)

3.4.5 Labour Force by Employment Status

Employment status is the personal position of one working in a business unit. In the national labour force survey, employment status is divided into seven categories. The first is self-employed: under this category come those who are working or willing to bear the economic risk of engaging in any business that offers the prospect of a return. The second category is employers who are helped by non-permanent workers/unpaid workers. The third category is employers who are helped by paid workers. The fourth category is workers/employees/ who work for another person or agencies/offices/companies receiving wages/salaries in the form of cash or goods in hand. Workers who do not have fixed employers are not classified as workers/employees but, rather, as casual employees.

Fifth, casual employees in agriculture are those who work for other persons/employers/institutions that are not fixed (more than one employer in the last month) in the agriculture business, such as household enterprises or non-business households, on the basis of receiving wages in the form of money or goods, and through both daily and contract systems. The sixth is casual employee in non-agriculture. It is someone who is employed by institutions or employers that are not fixed (more than one employer in the last month) in the non-agricultural sector on the basis of receiving wages in cash or in kind. Non-agriculture business includes: businesses in the mining sector, electricity, gas and water, construction, trade, transportation, finances, insurances, leasing and social services segment. The seventh is family workers or unpaid workers; this refers to someone who works to help others on the basis of not receiving wages. They consist of: 1) Household members such as wife or children who help their husband or father in farmland. 2) Other family members who are willing to help without expecting any wages. 3) Community members which mean somebody who is not blood related but eager to help a family business without receiving any payment, this person could be the neighbours or friends who live nearby.

Among the seven categories of employment status, employees represent the highest percentage, which shows an increasing trend from 27.5 per cent in 2008 to 30.1 per cent in 2010. The percentage of employers assisted by temporary workers/unpaid workers is also quite large but has decreased from 25.4 per cent to 20.0 per cent during the period 2008-2010. Meanwhile, the self-employed group slightly decreased from 20.4 per cent to 19.4 per cent in the same period. The other significant labour force group is the family workers or unpaid workers.

Table 3. 6: Labour Force by Employment Status

Employment Status	2008			2009			2010		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Self-employed	21.2	19.1	20.4	21.1	18.3	20.1	20.5	17.6	19.4
Employer assisted by temporary worker/unpaid worker	25.4	14.3	21.2	25.2	13.8	20.9	24.5	12.6	20.0
Employer assisted by permanent worker/paid worker	3.9	1.4	2.9	3.9	1.3	2.9	4.0	1.4	3.0
Employee	28.9	25.1	27.5	28.6	26.4	27.8	31.2	28.2	30.1
Casual employee in agriculture	6.0	5.6	5.8	5.7	5.4	5.6	5.6	5.0	5.4
Casual employee not in agriculture	6.8	2.4	5.2	7.3	2.4	5.4	6.4	1.9	4.7
Unpaid worker	7.8	32.1	16.9	8.1	32.4	17.3	7.7	33.3	17.3

Source: MoMT (2013)

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Further, Table 3.6 shows that the number of females aged 15 years and over who have become unpaid family workers is increasing and has reached 32 per cent, while men accounted for only 8.10 per cent. Meanwhile, the status of female workers/employees occupies second position, amounting to 28.2 per cent, while for men the figure was 31.2 per cent in 2010. The status of female workers who run their businesses with the help of permanent workers or paid labourers has the smallest percentage, amounting to only 1.37 per cent; the figure for males in the same category amounted to 4.0 per cent.

The condition of women as unpaid family workers paints a biased picture of labour market conditions in Indonesia, where women aged 15 years and above generally have to take care of household activities and usually participate and work to help heads of households as "family workers", helping to generate family income. The percentage of females with the status of family workers reached 33.30 per cent, while the percentage of men doing such jobs was quite small, at only 7.70 per cent in 2010.

Formal and informal activities can be roughly defined based on employment status. Based on seven categories of the major fields of work, formal employment covers the category of employees assisted by permanent workers and the category of employees. Meanwhile, informal activities refer to economic activities that are generally traditional, have no clear organizational structure, no formal record keeping, and have no clear ties between the owners (employers) and workers (labour). Table 3.7 shows that an informal activity is formulated from a combination of major occupations and occupational statuses. Boundaries can be seen as informal activities in the following table :

Table 3. 7: Informal activities definition

Employment Status	Job Category									
	Professionals	Executives and managerial workers	Clerical and related workers	Sales workers	Service workers	Agricultural, animal husbandry and forestry workers; fishermen and hunters	Production and related workers,	Transport equipment operators and	labourers	Others
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Self-employed	F	F	F	INF	INF	INF	INF	INF	INF	INF
Employer assisted by temporary worker/unpaid worker	F	F	F	F	F	INF	F	F	F	INF
Employer assisted by permanent worker/paid worker	F	F	F	F	F	F	F	F	F	F
Employee	F	F	F	F	F	F	F	F	F	F
Casual employee in agriculture	F	F	F	INF	INF	INF	INF	INF	INF	INF
Casual employee not in agriculture	F	F	F	INF	INF	INF	INF	INF	INF	INF
Unpaid worker	INF	INF	INF	INF	INF	INF	INF	INF	INF	INF

Notes: F = Formal, INF = Informal

Source: BPS (2009)

In Indonesia, Firdausy (2000) found that formal sector employment still lagged behind in response to economic change and contributed a lower share of total employment. Meanwhile, informal sector work was widespread and continued to grow in

the cities. Rural self-employed and family work still contributed a major share of total employment.

3.4.6 Labour Force by Working Hours

The proportions of labourers who worked for a certain number of hours during the period 2008-2010 are presented in Table 3.8. It illustrates the percentage of the population employed for fewer hours (<35 hours a week) who can be classified as part-time workers and the percentage of normal working hours (>35 hours a week).

One of the variables that can describe a person's productivity is the amount of time spent on work. Since 1982, Statistics Indonesia (BPS) and the Department of Labour have agreed upon a normal working week of 35 hours. Those who work less than 35 hours per week are considered part-time workers. During the period 2008-2010, the percentage of individuals working between 45 and 59 hours is the highest percentage in all categories. Meanwhile, the percentage of those working normal working hours (≥ 35 hours) decreases from 24.7 per cent in 2008 to 22 per cent in 2010. The percentages of individuals working between 15 and 24 hours and between 25 and 34 hours per week remain the same at 11 per cent and 13 per cent respectively.

Meanwhile, the non-working-age population and those who had jobs but were temporarily not working because they were on sick leave or waiting for the harvest and thus had zero working hours, ranged from 2.2 to 2.3 per cent. The population with zero working hours is permanently categorized as an economically active labour force.

Table 3. 8: Labour Force by Working Hours

Working Hours	2008			2009			2010		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
0	2.2	2.1	2.2	2.3	2.2	2.3	2.3	2.3	2.3
1-9	1.3	3.3	2.1	1.3	3.5	2.1	1.2	3.2	2.0
10-14	2.2	5.4	3.4	2.2	5.5	3.4	2.1	5.4	3.4
15-24	8.4	15.2	11.0	8.5	15.4	11.1	8.7	16.3	11.5
25-34	12.5	16.2	13.9	12.1	15.6	13.4	12.6	16.0	13.9
35-44	25.3	23.7	24.7	25.5	24.3	25.1	22.4	21.3	22.0
45-59	34.2	20.8	29.1	34.6	21.0	29.5	37.6	23.8	32.4
≥ 60	13.9	13.2	13.6	13.5	12.4	13.1	13.1	11.8	12.6

Source: MoMT (2013)

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Table 3.8 also shows the percentages of working hours for males and females. The average number of hours of employment in urban areas is higher than that in rural areas. Similarly, hours of work also differ according to sex, as normal working hours for men are still higher than for women. In 2008, for example, up to 25.3 per cent of men worked normal working hours compared to 23.7 per cent of women. Women dominate among part-time workers. For example, 16.3 per cent of females worked 14-24 hours per week compared to 8.7 per cent of male workers in 2010. This is also common in other countries. There are several reasons why so many women work part-time in Indonesia, including raising children and taking care of households, while men as heads of families need to work full time in order to meet their households' financial needs (Boserup et.al., 2013).

3.4.7 Labour Force by Income Level

In labour economics, the term 'wage' is often applied to those workers who are paid on a monthly rather than an hourly basis. It is important to distinguish between wages, earnings and income. The term 'wage' refers to the payment for a unit of time, whereas earnings refer to wages multiplied by a number of time units, typically hours worked. Thus, earnings depend on both wages and the length of time the employee works.

Both wages and earnings are normally defined and measured in terms of direct monetary payment to the employee before the deduction of any taxes that the employee is liable to pay (Juhn, Murphy and Pierce, 1993).

Total compensation, on the other hand, consists of earnings plus an employee's benefit, which is paid in-kind or deferred. An example of payment-in-kind is healthcare and health insurance, where the employee receives a service or an insurance policy rather than money. Paid vacation time also comes under this category since employees are given days off instead of cash. Deferred payments can take the form of the employer's financed retirement benefits, including social security taxes, for which employers set aside money so that their employees can receive a pension later. In this study, wage/salary/net income is defined as the total compensation the worker receives either in cash or in the form of goods. Table 3.9 shows that the real wage disparity between female and male workers based on residential area and the level of education.

Table 3. 9: Real Monthly Average Wage/Salary of Employee by Residential Location and Education (Rupiahs) – Index (2010=100)

Education	2009		Average	2010		
	Urban	Rural		Urban	Rural	Average
≤ Primary School	710,336	587,875	649,105	727,547	632,912	680,230
General Junior High School	940,920	791,382	866,151	1,196,549	829,680	1,013,115
General Senior High School	1,466,401	1,065,471	1,265,936	1,447,209	1,116,437	1,281,823
Vocational Senior High School	1,433,921	1,253,334	1,343,628	1,429,808	1,226,543	1,328,176
Diploma I/II/III	2,132,221	1,656,623	1,894,422	2,114,105	1,598,003	1,856,054
University	2,917,701	2,066,608	2,492,155	2,810,419	1,922,380	2,366,400
Average	1,600,250	1,236,882	1,418,566	1,620,940	1,220,993	1,420,966

Source: MoMT (2013)

In general, the average wages or salaries of women are lower than those of men. Similarly, wage conditions are based on residential location, as urban workers on average earn more than rural workers. The same conditions apply according to educational level and the ratio of wages of women and men, which indicate that women earn less than men

at each level of education. Significant wage differences can be seen among individuals who have not completed primary school level, where male workers earn more than female workers. Table 3.10 shows that male workers with primary education or less earned 765,252 rupiah compared to their female counterparts, who earned only 449,854 rupiah within 2010 period. Meanwhile, workers with Bachelor's qualifications earned the highest average wages, at around 2,663,763 rupiah in 2009 and 2,532,412 rupiah in 2010. It indicates that the average real earnings is slightly decrease at 131,351 rupiah.

Table 3. 10: Real Monthly Average Wage/Salary of Employee by Sex and Education (Rupiahs) - Index (2010=100)

Education	2009		Average	2010		Average
	Male	Female		Male	Female	
≤ Primary School	726,885	444,278	585,582	765,252	449,854	607,553
General Junior High School	953,597	686,368	819,983	1,122,980	828,133	975,557
General Senior High School	1,481,164	1,047,414	1,264,289	1,471,752	1,054,125	1,262,939
Vocational Senior High School	1,464,894	1,199,854	1,332,374	1,453,742	1,196,713	1,325,228
Diploma I/II/III	2,321,387	1,686,307	2,003,847	2,306,263	1,636,040	1,971,152
University	3,105,164	2,222,361	2,663,763	2,951,972	2,112,852	2,532,412
Average	1,675,515	1,214,431	1,444,973	1,678,660	1,212,953	1,445,807

Source: MoMT (2013)

Turning to the main employment areas, Table 3.11 shows that men also earn higher wages than women in all sectors of employment. In 2009, male workers on average earned 1,505,649 rupiah compared to their female counterparts, who earned only 1,278,874 rupiah. Similarly, in 2010 the wage gap between males and females was higher male at 1,884,306 rupiah than female at 1,478,985 rupiah. Table 3.11 also shows that, in 2009, the financial sector and business gave higher salaries to men and women at an average of 2,165,827 rupiah, followed by the electricity, gas and water sector at 1,867,261 rupiah, while the 2010 figure shows that the highest salaries are located in the trade sector at 2,271,678.

Table 3. 11: Real Monthly Average Wage/Salary of Employee by Sex and Main Employment (Rupiahs) - Index (2010=100)

Main Employment	2009		Average	2010		Average
	Male	Female		Male	Female	
Agriculture, Hunting, Forestry and Fishing	672,776	422,311	547,544	1,604,256	1,310,396	1,457,326
Mining and Quarrying	2,001,181	1,213,736	1,607,459	1,559,842	1,301,079	1,430,461
Manufacturing	1,234,386	869,603	1,051,994	1,838,093	1,141,211	1,489,652
Electricity, Gas and Water	2,089,393	1,867,261	1,978,327	1,996,715	1,422,238	1,709,477
Construction	985,476	1,335,015	1,160,245	2,145,470	1,501,834	1,823,652
Wholesale, Retail Trade, Restaurant and Hotels	1,228,727	932,249	1,080,488	2,638,720	1,904,636	2,271,678
Transport, Storage and Communication	1,419,496	1,457,191	1,438,344	1,970,812	1,863,101	1,916,957
Financing, Insurance, Real Estate and Business Services	2,169,505	2,165,827	2,167,666	1,998,605	1,919,561	1,959,083
Community, Social and Personal Services	1,749,903	1,246,670	1,498,286	1,206,245	946,806	1,076,526
Average	1,505,649	1,278,874	1,392,261	1,884,306	1,478,985	1,681,646

Source: MoMT (2013)

In terms of region, there was slightly decrease in average real earning within 2009 to 2010 in all regions, amounting to 175,560 rupiah. In addition, although men earn higher average wages than female, this difference has narrowed over time, and the gap in salaries between men and women has become smaller. Further, the highest wages for female workers are found in Papua region, amounting to 1,854,593 rupiah. This situation is in line with the socio-economic situation in Papua, where costs of living are higher compared to other regions. In 2010, the regional minimum wage in Papua was 1,316,500 rupiah per month (MoMT, 2013),[9] which means that the average wages of the workers are higher than Papua's minimum income.

Meanwhile the lowest average wage for women is found in Java region, where it was 779,336 rupiah in 2009, increasing to 953,775 rupiah in 2010.

[9] Regional Minimum Wage or *Upah Minimum Regional* (UMR) is a minimum standard that is used by the employers to give wages to its employees. The government regulated wages through Manpower Minister Regulation No. 05 / Men / 1989 date May 29, 1989 on Minimum Wage.

Table 3. 12: Real Monthly Average Wage/Salary of Employee by Sex and Region (Rupiahs) – Index (2010=100)

Province	2009		Average	2010		Average
	Male	Female		Male	Female	
Aceh	1,458,231	1,254,546	1,356,388	1,441,389	1,300,258	1,370,824
North Sumatera	1,289,238	1,065,398	1,177,318	1,264,998	1,078,759	1,171,879
West Sumatera	1,259,429	1,224,592	1,242,010	1,255,357	1,273,221	1,264,289
Riau	1,424,038	1,089,535	1,256,787	1,466,674	1,152,682	1,309,678
Jambi	1,297,732	1,011,951	1,154,841	1,333,145	1,057,533	1,195,339
South Sumatera	1,214,359	976,775	1,095,567	1,248,792	1,021,809	1,135,301
Bengkulu	1,346,987	1,171,893	1,259,440	1,379,295	1,233,377	1,306,336
Lampung	925,602	824,934	875,268	956,347	841,376	898,862
Bangka Belitung Islands	1,338,525	986,773	1,162,649	1,308,104	1,007,446	1,157,775
Riau Islands	2,080,856	1,570,839	1,825,847	2,058,602	1,635,121	1,846,862
Sumatera	**1,363,500**	**1,117,724**	**1,240,612**	**1,371,270**	**1,160,158**	**1,265,714**
Jakarta	2,208,495	1,618,790	1,913,642	2,162,229	1,633,670	1,897,950
West Java	1,211,913	948,036	1,079,975	1,268,406	1,003,934	1,136,170
Central Java	896,572	682,776	789,674	952,250	73,256	512,753
Yogyakarta	1,199,121	941,301	1,070,211	1,194,222	980,305	1,087,264
East Java	954,309	725,221	839,765	991,971	766,544	879,258
Banten	1,580,439	1,245,168	1,412,803	1,597,539	1,264,940	1,431,240
Java	**1,341,808**	**1,026,882**	**1,184,345**	**1,361,103**	**953,775**	**1,157,439**
Bali	1,511,744	1,053,103	1,282,423	1,496,732	1,068,749	1,282,741
West Nusa Tenggara	1,125,956	655,061	890,509	1,164,047	687,977	926,012
East Nusa Tenggara	1,361,063	1,320,454	1,340,758	1,417,065	1,352,422	1,384,744
Lesser Sunda Islands	**1,332,921**	**1,009,539**	**1,171,230**	**1,359,281**	**1,036,383**	**1,197,832**
West Kalimantan	1,331,742	1,060,672	1,196,207	1,327,820	1,051,775	1,189,798
Central Kalimantan	1,534,807	1,153,629	1,344,218	1,490,935	1,181,992	1,336,464
South Kalimantan	1,377,862	987,677	1,182,770	1,416,374	1,020,092	1,218,233
East Kalimantan	2,324,305	1,631,562	1,977,933	2,272,769	1,575,255	1,924,012
Kalimantan	**1,642,179**	**1,208,385**	**1,425,282**	**1,626,975**	**1,207,279**	**1,417,127**
North Sulawesi	1,198,646	1,288,595	1,243,621	1,253,229	1,327,215	1,290,222
Central Sulawesi	1,190,305	1,140,812	1,165,558	1,188,624	1,092,262	1,140,443
South Sulawesi	1,229,945	1,019,750	1,124,848	1,253,411	1,030,348	1,141,880
Southeast Sulawesi	1,411,984	1,064,440	1,238,212	1,417,459	1,136,658	1,277,059
Gorontalo	1,084,978	926,364	1,005,671	1,078,751	994,930	1,036,841
West Sulawesi	1,177,152	1,042,783	1,109,967	1,225,847	1,028,596	1,127,222
Sulawesi	**1,215,502**	**1,080,457**	**1,147,979**	**1,236,220**	**1,101,668**	**1,168,944**
Maluku	1,617,593	1,489,397	1,553,495	1,598,500	1,513,538	1,556,019
North Maluku	1,651,477	1,235,172	1,443,325	1,609,876	1,250,984	1,430,430
Maluku	**1,634,535**	**1,362,285**	**1,498,410**	**1,604,188**	**1,382,261**	**1,493,225**
West Papua	1,982,230	1,790,145	1,886,187	2,015,699	1,839,551	1,927,625
Papua	2,323,315	1,926,482	2,124,898	2,251,127	1,869,635	2,060,381
Papua	**2,152,772**	**1,858,313**	**2,005,543**	**2,133,413**	**1,854,593**	**2,062,905**
Average	**1,526,174**	**1,237,655**	**1,381,914**	**1,294,867**	**1,024,991**	**1,206,054**

Source: MoMT (2013)

3.5 The Level and Rate of Unemployment

3.5.1 Concept and Definition of Unemployment

The concept and definition of unemployment used in this study refers to the International Labour Organisation's (ILO) definition, as it is adopted by Statistics Indonesia. According to the ILO (2012), those who do not have jobs are considered unemployed. These include the following: (1) individuals who are looking for jobs; (2) individuals who intend to launch businesses; (3) individuals who are not looking for work because they see it as a hopeless task; and (4) individuals who already have a job, but have not yet started.

From 2001 onwards, those individuals who had recently obtained jobs but had not started working when the unemployment survey was conducted were categorized as unemployed. Some examples of individuals temporarily absent from work include the following: (1) employees of the government/ private sector who are absent from work due to leave, sickness, strikes, machinery/equipment failure, and so on; (2) those who are seeking farmland but are not working because they are ill or waiting for the harvest or for rainfall in order to plant seeds in the fields; and (3) people with specific expertise who are not at work because their skills and expertise are not required by the market for various reasons.

Rates of unemployment can be measured as the ratio of unemployed people to the total labour force (BPS, 2008): Unemployment rate = (unemployed/labour force) x 100 per cent. The level and rate of unemployment depend on four conditions: the size of the working age population, labour force participation rate, the number of employment opportunities created in the economy, and the number of unfilled vacancies. The first two factors determine the supply of labour. Actual employment is the difference between job opportunities and unfilled vacancies. The level of unemployment is simply the labour force minus actual employment (BPS, 2008).

Unemployment is one of the biggest national issues for the majority of countries around the world. However, the social and political conditions of a country, which are pivotal to the stability of the economy, may not have a crucial effect on the labour market conditions. This appears to be an un-interrupted cycle,[10] that is high unemployment often spills over from regions with low regional domestic production, causing a sluggish national economy and a protracted economic crisis; this results in a dramatic rise in the number of unemployed people (Silvey and Elmhirst, 2003).

Unemployment occurs as a result of an incomplete labour market or conditions in which the labour market is unable to absorb the working-age population. This happens because labour force supply in the labour market exceeds labour force demand to fill the employment opportunities created.

3.5.2 Policies and Unemployment Solution

High unemployment in Indonesia may be due to the decreasing level of social welfare and poverty and the impact of the incidence of various social insecurity factors in the region. To overcome the unemployment-related problem, the government has set up a comprehensive and precise unemployment policy and program. Legally, the guidance, reference policies and unemployment prevention program have been stipulated in the Law 13/2003 on manpower. Law Number 13 /2003 on manpower mandates that construction employment should aim to empower and utilize the labour force optimally, realize equal employment opportunities and provide a labour supply in accordance with national and regional development needs, maintaining workers' safety, and improving the welfare of workers and their families, which cannot be separated from efforts to increase productivity.

[10] An unemployment runs continuously without interference.

3.5.3 Unemployment by Category

Table 3.13 shows the unemployment rate by category. The job-seeking category contains the largest proportion of the number of unemployed during the period 2008-2010. Meanwhile, the group consisting of those preparing businesses represented the smallest proportion. The group containing the desperate and those who have not started working fluctuates year by year. It is important to observe that the category of those who are unemployed due to discouragement[11] is relatively large.

Table 3. 13: Unemployment Level by Category

Category	2008			2009			2010		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Job-seeking	77.2	70.2	74.1	67.3	64.3	66.1	77.8	76.7	77.2
Preparation for Business	1.6	1.9	1.7	1.4	2.0	1.6	1.7	2.0	1.8
Discouraged	18.6	24.5	21.2	15.9	10.6	13.7	17.1	13.1	15.2
Already have a job, but have not started working	2.6	3.4	3.0	15.4	23.2	18.6	3.5	8.2	5.7

Source: MoMT (2013)

3.5.4 Unemployment by Region

One way in which the BPS can obtain information on unemployment is through the labour survey, which is currently conducted biannually in February and August. The survey asks people whether they are working or doing other activities, and whether they are looking for jobs or have not yet started jobs. Table 3.14 presents the unemployment rate by region. It shows the unemployment rate according to the February survey records in each year. During the period 2008-2010, Java region had the highest unemployment rate compared to the other years in most provinces. In 2010, unemployment tends to be lower than in the previous year, although it has increased slightly in the Lesser Sunda

[11] They are discouraged because they have tried hard to find work many times but have failed. Thus, they feel that they will not be able to find a job due to the situation/condition/climate.

Islands. Outside Java Island, Maluku has recorded the highest unemployment rate at 8.5 per cent in 2009 and 7.5 per cent in 2010.

Table 3. 14: Unemployment by Region

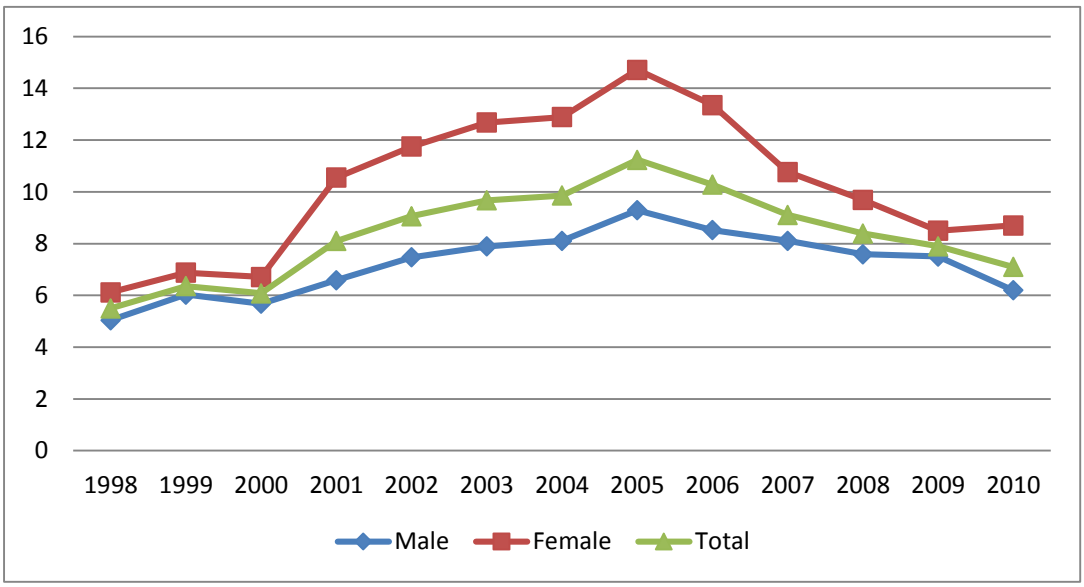
Province	**2008**	**2009**	**2010**
Aceh	9.20	9.31	8.60
North Sumatera	9.55	8.25	8.01
West Sumatera	9.73	7.90	7.57
Riau	9.35	8.96	7.21
Jambi	5.91	5.20	4.45
South Sumatera	8.45	8.38	6.55
Bengkulu	3.98	5.31	4.06
Lampung	6.30	6.18	5.95
Bangka Belitung	5.79	4.82	4.24
Riau Islands	8.49	7.81	7.21
Sumatera	**7.68**	**7.21**	**6.39**
Jakarta	11.06	11.99	11.32
West Java	12.28	11.85	10.57
Central Java	7.12	7.28	6.86
Yogyakarta	6.04	6.00	6.02
East Java	6.24	5.87	4.91
Banten	14.15	14.90	14.13
Java	**9.48**	**9.65**	**8.97**
Bali	4.56	2.93	3.57
West Nusa Tenggara	5.20	6.12	5.78
East Nusa Tenggara	3.70	2.78	3.49
Lesser Sunda Islands	**4.49**	**3.94**	**4.28**
West Kalimantan	6.49	5.63	5.50
Central Kalimantan	4.79	4.53	3.88
South Kalimantan	6.91	6.75	5.89
East Kalimantan	11.41	11.09	10.45
Kalimantan	**7.40**	**7.00**	**6.43**
North Sulawesi	12.30	10.63	10.48
Central Sulawesi	7.25	5.11	4.89
South Sulawesi	10.49	8.74	7.99
Southeast Sulawesi	6.05	5.38	4.77
Gorontalo	7.04	5.06	5.05
West Sulawesi	5.68	4.92	4.10
Sulawesi	**8.14**	**6.64**	**6.21**
Maluku	11.05	10.38	9.13
North Maluku	7.03	6.61	6.03
Maluku	**9.04**	**8.50**	**7.58**
West Papua	9.30	7.73	7.77
Papua	4.85	4.13	4.08
Papua	**7.08**	**5.93**	**5.93**

Source : BPS (2010b)

3.5.5 Unemployment by Gender

In general, female employee's unemployment rate is always higher than that of men during the period 1998-2010. Figure 3.5 shows that wome's unemployment ranges from 6.12 per cent in 1998 to 14.71 per cent in 2005 and 8.7 per cent in 2010. Meanwhile, men's unemployment rate ranges only from 5 per cent in 1998 to 9.29 per cent in 2005 and 6.2 per cent in 2010. During the period 2000-2005, the unemployment rate for both female and male employees continues to rise gradually but declines between 2006 and 2010. These fluctuations are irregular and largely unpredictable.

Figure 3. 5: Unemployment Rate by Gender (Percentages)



Source: ILO (2013)

In times of recession, real GDP and other measures of income, spending and production fall, and unemployment rises. All societies, including Indonesia, experience short-run economic fluctuations around long-run trends.

Table 3.15 and Figure 3.6 present unemployment rates according to age groups during the period 2008-2010, indicating that those aged up to 29 years account for the largest share of unemployment. Further, the highest unemployment rate was recorded among those members of the labour force aged 20-24 years, ranging from 29.72 per cent

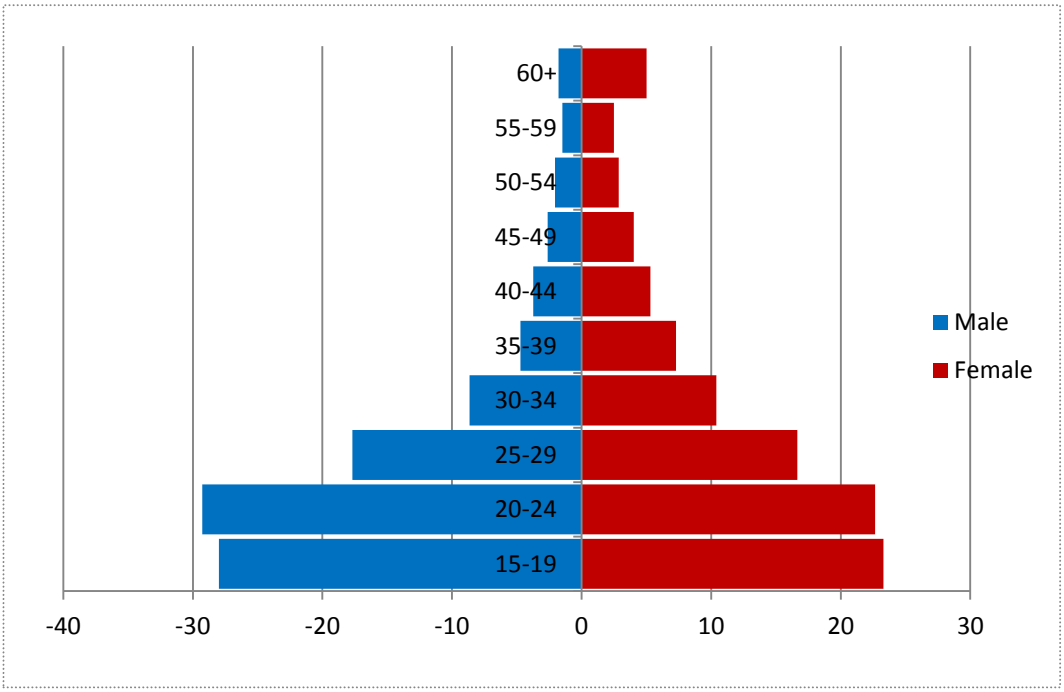
in 2008 to 26.02 per cent. Next is the 15-19 age group, with unemployment rates ranging from 24.5 per cent to 25.8 per cent, followed by the 25-29 age group ranging from 18.7 per cent to 17.2 per cent. Meanwhile, unemployment among the five-year age groups aged 30 years and above is generally less than 10 per cent. From the results, it can generally be concluded that unemployment rates are lower among the more mature age groups.

Table 3. 15: Unemployment Rate by Age and Gender (Percentages)

Age Groups	2008			2009			2010		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
15-19	24.2	24.9	24.5	25.3	26.3	25.7	28.0	23.3	25.8
20-24	29.5	28.4	29.0	28.5	27.5	28.1	29.3	22.7	26.2
25-29	18.7	18.7	18.7	17.1	17.2	17.2	17.7	16.6	17.2
30-34	10.7	11.0	10.9	8.8	9.8	9.2	8.6	10.4	9.5
35-39	6.9	0.8	7.4	5.8	6.7	0.6	4.7	7.3	5.9
40-44	3.9	3.8	3.8	4.8	4.9	4.8	3.7	5.3	4.5
45-49	2.2	1.9	2.1	3.8	3.6	3.7	2.6	4.0	3.3
50-54	1.8	1.2	1.5	2.9	2.1	2.6	2.1	2.9	2.4
55-59	1.2	0.8	1.1	2.0	1.1	1.7	1.5	2.5	2.0
60+	0.7	1.2	0.9	0.9	0.7	0.8	1.8	5.0	1.5

Source: MoMT (2013)

Figure 3. 6: Pyramid of Unemployment Rate by Age and Gender (2010)



Source : MoMT (2013)

It is interesting to analyze the unemployment rate among the younger age group between 15 and 24 years. It can be concluded that, during the period 2008-2010, the younger age group has the highest unemployment rate (ILO, UNICEF and World Bank, 2012). This phenomenon is quite interesting considering that this age group contains the school-age population, who are enrolled in secondary schools and higher education. In other words, the labour force in the younger age group is not yet ready to enter the labour market. There are some background factors explaining why the young age group is entering the job market, such as the family's difficult economic circumstances forcing them to leave school/college and enter the labour market (The President Post, 2012). In addition, the younger age group is more idealistic in the matter of choosing a job, considering factors such as expertise, hobbies, salaries and prestige. As a result, their employment opportunities become limited. In addition, this age group does not have the economic burden of the family, dependents and social communities.

3.5.6 Unemployment by Education

The quality and competence of human resources in the labour market can be improved by educational transformation. Higher levels of education for the labour force will increase productivity at work. The analysis of unemployment by educational level can be used as an indicator of the inability of the labour market to utilize the labour supply. The unemployment rate among the educated is an indicator of the large number of unemployed people with high levels of education in particular regions. This indicator describes the comparison of educated job seekers above Senior Secondary High School (SLTA) and equivalent levels with those having college/university educational backgrounds and considered an educated group.

Table 3.16 shows how the total unemployment in Indonesia is distributed across all levels of education. During the period 2003-2010, unemployment with primary school education ranges from 3.7 per cent to 6.9 per cent. On average, the highest unemployment rates with junior high school and senior high school education ranged from 10 per cent to 20 per cent. Generally, the unemployment rate at all levels of education during the period 2003-2010 tends to be highest among the population with low educational levels. Comola and Mello (2010) found that workers with higher educational attainment are most likely to find jobs as salaried employees; however, Table 3.16 shows that workers with higher educational levels tend to increase the unemployment rate from 9.1 per cent in 2003 to 14.2 per cent in 2010.

Table 3. 16: Unemployment Rate by Education (Percent)

Education	2003	2004	2005	2006	2007	2008	2009	2010
Primary School or >	6.5	6.5	6.7	6.9	6.9	4.7	4.5	3.7
Junior High School	11.7	11.7	12.6	13.1	11.8	10.1	9.4	7.6
Senior High School	17.1	17.1	18.8	19.2	17.1	13.7	12.4	11.9
Vocation Senior High School	16.6	16.6	16.4	16.9	16.0	14.8	15.7	13.8
Diploma	10.4	10.4	12.9	12.2	12.0	16.4	15.4	15.7
University	9.1	9.1	11.5	10.6	10.6	14.3	12.9	14.2

Source: BPS (2008)

3.6 Conclusion

This chapter describes the profile of the Indonesian labour market. The Indonesian working population reached 169 million in 2009, while the economically active labour force consists of 113 million people or around 67.32 per cent. Among the active labour force, 104 million people, or 92.13 per cent, are currently working while 7.87 per cent are unemployed. Most workers are aged between 25 and 44 years. This means that the majority of them are middle-aged and have not been subject to the schooling requirements. Workers with primary education only still dominate the labour market in

Indonesia while the number of workers with secondary and higher education also tends to increase from year to year.

From 1989 to 2009, most workers were employed in the agricultural sector, followed by the services sector and the processing industry. During the same period, there have been changes in the structure of the Indonesian economy from the agricultural to the industrial and services sectors. This has been characterized by increasing employment in industrial and services sectors. The agricultural sector still dominates in rural areas, while the urban areas are dominated by several sectors including trading, public services and industry.

The average working hours are between 45 and 59 hours per week. It seems that working hours longer than the standard working hours have been imposed on Indonesia, since full-time workers normally work between 35 and 40 hours per week. The average earnings of urban workers are higher than those of workers in rural areas. Workers with university qualifications earn more than those with other levels of education. In addition, male workers receive higher earnings than female workers with the same qualifications. Further, work in the finance sector provides higher earnings than work in other sectors.

The problem of unemployment in Indonesia is caused by several factors, including foreign direct investment (FDI) and business cycle effects. Most of the unemployed are job-seekers aged between 15 and 29 years.

CHAPTER 4
LITERATURE REVIEW

4.1 Introduction

Studies on the rate of return to education are prominent in the human capital literature. 'Human capital' is a term used by labour economists to describe people's level of education and health conditions, both of which could increase productivity if provided adequately and appropriately (Schultz, 2003). Smith (1776) adds that another source of human capital is experience gained as labour becomes more specialized according to the principle of the division of labour. Spending on education is considered an investment in human capital which will increase the rate of return in the future. The rate of return to education can be obtained and compared with other returns to investment. Returns to investment in human capital can be estimated with the present discounted value from earnings, which will increase due to investment in education, and then comparing it with direct or indirect costs (Todaro and Smith, 2009).

Many studies have found that women earn less than men. For example, the theories of human capital investment and economic discrimination suggest that differences in the average wage of racial or gender groups occur due to differences in their average skills (Malkiel and Malkiel, 1973), or productivity characteristics (Cotton, 1988). Other studies note that lower participation by women in the paid labour market leads to a gender earnings differential (Susilowati, 2005), while discrimination may manifest itself through unequal access to occupations as well as unequal pay for equal work (Arabsheibani and Lau, 1999). The sources of wage differences vary among economic studies. Many economists have attempted to explain this difference but tend to

provide insufficient discussion, usually leaving unexplained a substantial part that may or may not be due to discrimination. Researchers frequently omit an unexplained component that may or may not be due to discrimination (Filer, 1985). Furthermore, wages are paid not for general hours of labour supplied but rather for hours of labour supplied doing particular jobs. Filer (1985) found significant differences between the working conditions typical of jobs held by women and those held by male workers.

This chapter reviews the existing literature on education as human capital, the rate of return to education, gender discrimination and earnings differentials in Indonesia across regions. The outline of the chapter is as follows. Section 4.2 discusses education as human capital. This section provides an analysis of education as investment in non-physical capital and then examines the theory of human capital. Section 4.3 reviews the rate of return to education. It presents the differences in return to education for both male and female workers. Gender discrimination and the earnings differential, including the case of the Indonesian labour market, are discussed in sections 4.4 and 4.5. Section 4.6 concludes the chapter.

4.2 Education as Human Capital

Although theory of human capital developments took place in the 1950s and 1960s, human capital theory actually had its roots at least as far back as Sir William Petty who considered labour to be "the father of wealth" (Polachek, 2008). Jacob Mincer (1958) pioneered an important approach to understand how earnings are distributed across the population. It can be regarded as the first to derive an empirical formulation of earnings over the life cycle and the first systematic contribution to the emergence of human capital theory. He used various characteristics of wage earners such as occupation, education, age, and sex in his empirical research.

Later in 1960s, Schultz treats education as investment in man and as a form of capital. Since education become part of part of person receiving it, Schultz refers education as human capital. Human capital is a term often used by economists to refer to education, health and any other human capacity that can increase productivity if improved (Todaro and Smith, 2009). As capital, the expenditure on education can be equated to an investment that provides returns in the future. The positive correlation between education and earnings at the individual level is one of the most firmly established facts in economics literature. However, Checchi (2005) argued that the existence of a causal relationship between the two has not yet been established. Unobserved factors thus far omitted by researchers may affect both variables. These factors include parental education, behavioural traits, school quality based on peer effects, and discrimination (ethnic or gender discrimination can prevent access to the best positions in highly ranked colleges and to top-paid jobs).

As a form of investment, the rate of return from education can be determined and compared with the returns from other investments. This is done by estimating the present discounted value of the increased income stream made possible by these investments and then comparing it with their direct and indirect costs (Todaro and Smith, 2009). Investment in education faces a trade-off with the decision to continue schooling. The longer a person remains in schooling, the more his/her future earnings will exceed those of people who decide to leave school. Even those who decide to continue in further education should consider the direct and indirect costs, a cost that is not covered by those who leave school immediately after completing primary education (Checchi, 2005).

The theory of human capital was developed by Schultz (1960, 1961), Becker (1962, 1964), and Mincer (1950, 1970, 1974). In their pioneering work, they assumed that all workers are equally productive and that a worker's productivity is related to human capital. In this model, productivity can be enhanced through investment in formal

education, training or other forms of human capital such as health or information in the labour market. According to this theory, years of education and experience have a positive effect on workers' earnings; if there is a difference in earnings in the absence of labour market discrimination, it is believed that such differences are due to varying productivity among the workers. Therefore, if all workers were equally productive, they would earn the same wages.

The Mincer earnings function is a single-equation model that explains earnings as a function of schooling and experience, named after Jacob Mincer (1958, 1974). Jacob Mincer's model of earnings is a cornerstone of empirical economics that attempted to update the analysis developed in his Ph.D. dissertation (finished in 1957 and published in a revised version in the Journal of Political Economy in 1958). Mincer's earnings function is still going strong today and tends to be the dominant rate of return estimation procedure (Pscaharapoulos, 1981). Mincer was the first to derive an empirical formulation of earnings over life cycle (Polachek, 2008). The equation has been examined on many datasets and Thomas Lemieux argues it is one of the most widely used models in empirical economics (Lemieux, 2006).

Mincer's (1974) earnings equation focuses on the life-cycle dynamics of earnings and on the relationship between observed earnings, potential earnings, and human capital investment, both in terms of formal schooling and on-the-job investment. He assumes that the rate of return on formal schooling is constant for all years of schooling and that formal schooling takes place at the beginning of life. Also assume the rate of return to post-school investment is constant over time. Mincer states that, if the only cost of attending school is the opportunity cost of the student's time and if the proportional increase in earnings conferred by additional years of schooling is constant over work time, the log of wages will be linear to the individual's years of schooling, where the slope of coefficient is to represent estimates of average rates of return on investments in schooling as shown

by equation 4.1. Mincer found that changes in educational levels could be a determining factor of an increase in earnings. He developed a model that later became known as the Mincerian Wage Equation. This equation can be written as follows:

$$LnW_i = b_0 + b_1 S_i + b_2 X_i + b_3 X_i^2 + e_i \quad (4.1)$$

Where LnW_i is natural log of the individual hourly wage, S_i is years of schooling, X_i is working experience, X_i^2 is work experience squared, and ε_i is an error term. Equation (4.1) is based on human capital theory where $b = r$, the estimated regression coefficient (b) is interpreted as the average private rate of return to one extra year of schooling. An illustrative proof of this proposition is that

$$b = \frac{\partial lnW}{\partial S} = r \quad (4.2)$$

the rate of return (r) is nothing else than the relative change in earnings (∂lnW) following a given change in schooling (∂S).

There exist two ways one can add an educational level dimension to this average rate of return concept. The first way is to add an $e.S^2$ term in equation (4.1), where e is the estimated coefficient on years-of-schooling-squared. In this case, differentiation with respect to S yields

$$r = B + 2eS \quad (4.3)$$

By substituting different values of S in the right-hand side of equation (4.3), one can arrive at a regression-derived rate of return structure corresponding, say, to primary education ($S=6$), secondary education ($S=12$) and higher education ($S=16$). The second way is to specify different educational levels in the earnings function by means of a series of dummy variables, say primary (PRIM), secondary (SEC) and higher education (HIGH), having a value of 1 if the individual belongs to the particular educational level and 0 otherwise:

$$LnW = a + b \cdot PRIM + c \cdot SEC + d \cdot HIGH + e \cdot EX + f \cdot EX^2 \quad (4.4)$$

There are several answers relies in the facts that explain the popularity of Mincer earning equation. First, this model earnings equation is based on a formal model of investment in human capital. Second, the Mincer equation provides a parsimonious specification that fits the data remarkably well in most contexts. In this regard, the key contribution of Schooling, Experience and Earnings was the introduction of potential experience as a standard repressor in the earnings regression. Third, the Mincer model was the most widely used specification of empirical earnings equations (Lemieux, 2006 and Heckman, 2003).

The interesting point about Mincer's model is that the amount of time allocated to attaining a certain level of education is the main factor in increasing earnings. Therefore, those with a higher level of education will have a better chance of obtaining a higher income level than those who have low levels of education. Another interesting element of Mincer's model is that the amount of time spent in education is a main determinant of increased earnings. These arguments hold if the estimated coefficient on years of schooling is positive and statistically significant. That is to say, someone with a higher level of education has a better chance of earning a higher income than someone with a lower level of education.

The main problems with this method, however, first, it cannot readily incorporate cost and tax data in order to estimate social rates of return, and secondly, this method relies on many strong assumptions, which were valid in the period when the model was proposed but do not hold anymore since the data available to estimate it have greatly improved. Mincer's earnings equation still serves as the point of departure for

most empirical studies of the returns to school. His analysis provides a basic theoretical underpinning for estimating the internal rate of return to education using regressions of log earnings on schooling and a separable quadratic function in experience. This study provides an extension of Mincerian earnings model based on data available within Indonesian case study.

Based on the theory of Mincer and others, some believe education to be an important indicator of increased income for individuals and the development of the country. Therefore, attainment at all levels of education has increased throughout the world, especially in less developed and developing countries.

Barro and Lee (2013) present a dataset on educational attainment for the population aged over 15 at ten-year intervals between 1950 and 2010 for a range of countries. The data provide the distribution of educational attainment of the population at three levels of schooling by separate regions over 146 countries. They found that educational progress had continued in most regions until 2010. Table 4.1 shows that the average years of schooling for persons aged over 15 in 24 advanced countries increased from 6.22 per cent in 1950 to 11.3 per cent in 2010. For 122 developing countries, the average years of schooling grew from 2.05 per cent in 1950 to 7.09 per cent in 2010.

Table 4. 1: Trends of Educational Attainment of the Total Population Aged 15 and Over by Region

Region (No. of countries and years)	Population aged 15 and over (Million)	Highest Level Attained							Average Years of Schooling
			Primary		Secondary		Tertiary		
		No Schooling	Total	Completed	Total	Completed	Total	Completed	
		(% of population aged 15 and over)							
World (146)									
1950	1588	47.2	38.1	18.8	12.5	6	2.2	1.1	3.17
1960	1831	42.5	38.4	19.1	16.3	8.1	2.7	1.4	3.65
1970	2221	35.6	38.1	20.2	22.4	11.4	3.9	2	4.45
1980	2761	30.6	33	17.8	30.5	12.4	6	3.1	5.29
1990	3413	25.5	30.5	17.5	35.6	16.1	8.3	4.4	6.09
2000	4064	20.1	27.5	17.5	41.8	21.5	10.6	5.9	6.98
2010	4759	14.8	25.2	17.6	48	26.1	11.9	6.7	7.76
Advanced (24)									
1950	428	9.2	60.1	38.1	25	12.7	5.7	2.8	6.22
1960	476	7.8	54.1	34.5	31.1	16.8	6.9	3.5	6.81
1970	541	6.2	45.3	31.7	38.6	21.8	9.9	5.1	7.74
1980	614	5.5	34.2	24.6	44.4	26.7	16	8.3	8.82
1990	683	5.5	27	19.7	44.9	25.9	22.6	11.6	9.56
2000	746	3.4	19.1	14.8	49.5	31.7	28	15.4	10.65
2010	805	2.3	14.2	11.5	57.9	37.7	25.6	14.5	11.03
Developing (122)									
1950	1160	61.2	30	11.7	7.9	3.5	0.9	0.5	2.05
1960	1355	54.7	32.9	13.7	11.1	5.1	1.3	0.7	2.55
1970	1681	45.1	35.8	16.4	17.2	8.1	1.9	1	3.39
1980	2146	37.7	32.7	15.9	26.5	8.3	3.1	1.6	4.28
1990	2730	30.5	31.4	16.9	33.3	13.6	4.8	2.6	5.22
2000	3318	23.9	29.4	18.2	40.1	19.2	6.6	3.8	6.15
2010	3954	17.4	27.4	18.8	46	23.7	9.2	5.1	7.09
By Region									
Middle East and North Africa (18)									
1950	48	88.1	8.5	3.5	2.6	1.1	0.9	0.5	0.76
1960	58	84.3	10.2	4.4	4.2	1.8	1.2	0.7	1.07
1970	75	75.6	14.1	6.1	8.4	3.8	2	1	1.78
1980	102	61.6	19	8.3	15.9	8.2	3.5	1.8	3.04
1990	142	45.2	24.1	11.3	25.6	14.5	5.1	2.8	4.58
2000	196	32.9	26.4	12.8	32.8	19.6	7.9	4.4	5.9
2010	256	24.5	24.4	14.8	39.6	23.3	11.6	6	7.12
Sub-Saharan Africa (33)									
1950	61	77.1	17.7	5	4.6	1.2	0.6	0.1	1.28
1960	76	72.3	22.1	6.5	5	1.3	0.7	0.2	1.52
1970	97	64.6	26.5	6.9	8.1	2.2	0.8	0.2	2.02
1980	129	55.2	32.1	11	12	3.8	0.8	0.3	2.76
1990	175	43.6	36.4	17.1	18.4	6.2	1.5	0.5	3.93
2000	233	38.4	35.9	19.3	23.5	7.3	2.2	0.7	4.62
2010	295	32.6	37.9	23.5	26.9	8.6	2.5	0.9	5.23

Table 4.1: Continued

Region (No. of countries and years)	Population aged 15 and over (Million)	No Schooling	Highest Level Attained: Primary Total	Primary Completed	Secondary Total	Secondary Completed	Tertiary Total	Tertiary Completed	Average Years of Schooling
			(percentage of population aged 15 and over)						
Latin America and the Caribbean (25)									
1950	98	45.9	46.6	15.5	6.5	3	1	0.6	2.57
1960	124	39.1	49.7	17.6	9.6	4.2	1.5	1	3.07
1970	161	30.2	52.4	20.3	14.9	6.1	2.5	1.5	3.82
1980	215	22.5	52.6	15.4	19.5	8.3	5.3	3	4.6
1990	278	16.5	48.6	15.7	26.9	12.2	8	4.5	5.79
2000	351	12.2	41.9	23.3	35.9	18	9.9	5.7	7.13
2010	425	7.7	34.5	22.3	45.1	25.3	12.6	7.1	8.26
East-Asia and the Pacific (19)									
1950	496	67.1	24.7	8.6	7.8	4.2	0.4	0.2	1.77
1960	556	56.6	30.9	12.1	11.6	6.6	0.9	0.5	2.5
1970	695	40.4	39.4	17.2	19	11.6	1.3	0.7	3.66
1980	900	26.4	40.5	19.8	31.3	10	1.8	0.9	4.84
1990	1168	23	36.4	19.5	37.2	19.6	3.4	1.7	5.6
2000	1377	14.3	33.2	19.3	46.5	30.4	6	3.5	6.82
2010	1593	7.9	30.1	19	51.7	38.1	10.3	5.8	7.94
South Asia (7)									
1950	282	76.1	20.5	5.7	2.9	1	0.6	0.3	1.02
1960	341	73.4	22.4	7	3.6	1.2	0.6	0.3	1.16
1970	423	68.7	24.1	10.6	6.2	1.8	1.1	0.6	1.59
1980	543	69.2	14.1	8.5	14.5	1.7	2.1	1.1	2.1
1990	694	53.1	18.6	13.6	24.6	2.7	3.7	2	3.41
2000	879	44.7	19.5	15.8	31.3	4	4.6	2.7	4.22
2010	1100	33.2	21.5	18.8	39.8	6	5.5	3	5.24
Europe and Central Asia (20)									
1950	174	16.1	61.1	32.9	20	7.5	2.7	1.5	4.83
1960	199	11.7	56.6	32.5	28	10.2	3.7	2.1	5.56
1970	229	7.8	46	29.6	40.5	14.4	5.7	3.1	6.69
1980	257	5.4	33.4	23.5	52.3	18.6	8.9	4.9	7.88
1990	272	3.4	25.5	18.5	59	21.8	12	7.1	8.85
2000	283	2.5	22.8	16.3	60	22.7	14.6	8.5	9.13
2010	284	1.3	16.4	11.8	65.5	25.3	16.9	9.9	9.65

Source: Barro-Lee (2013)

Present Value (PV) is another tool used to analyse the rate of return to investment in human capital. This method is intended to help investors make decisions on which type of investment is beneficial after considering the costs and benefits of the investment, including the opportunity cost. It is from this standpoint that the decision on whether or not to continue schooling is often made. Mathematically, a person who decides to work immediately after completing his/her secondary education can be presented as follows (Borjas, 2008):

$$PV_{HS} = w_{HS} + \frac{w_{HS}}{(1+r)} + \frac{w_{HS}}{(1+r)^2} + \ldots + \frac{w_{HS}}{(1+r)^{46}} \quad (4.5)$$

The parameter r in equation 2 is the worker's rate of discount. Assuming that the age when completing high school is 18 and individuals' productive time ends at the age of 65, then there are 47 terms in this sum. Meanwhile, for those proceeding further to a college education, his/her income present value equation is as follows:

$$PV_{COL} = -H - \frac{H}{(1+r)} - \frac{H}{(1+r)^2} - \frac{H}{(1+r)^3} + \frac{W_{COL}}{(1+r)^4} + \frac{W_{COL}}{(1+r)^5} + \ldots + \frac{W_{COL}}{(1+r)^{46}} \quad (4.6)$$

The first four terms in this sum up give the present value of the direct cost of a college education, whereas the remaining 43 terms give the present value of lifetime earnings in the post-college period.

We assume that a person's decision to go to school is a decision to maximize the present value of income. Therefore, the present value of income of a person with a diploma will exceed the present value of those who decide to work immediately after high school. Mathematically, this can be written as follows:

$$PV_{COL} > PV_{HS} \quad (4.7)$$

The basic assumption of human capital theory is that people can increase their incomes through better education. Each additional year of schooling improves employability and, possibly, income level. On the other hand, each extra year delays earnings while the individual attends school (Simanjuntak, 1982). According to Susilowati (2005), education has an influence on gender discrimination because education plays a key role in increasing labour force participation. This finding suggests that increasing human capital among females will reduce the gender gap. If rising human capital is to reduce gender income inequality, human capital must play an important role in explaining the current gender gap.

4.3 Rate of Return to Education

Studies on the rate of return to education have been the concern of many economists since empirical investigators found that human resources played an important role in private and social returns (Schultz, 1960; Polachek, and Siebert,1993).

Economists often have different views on investment that may be placed in human capital rather than in physical capital. The studies by Psacharopoulos (1973, 1981, 1994, 2004), Blundell et al. (2001), Duraisamy (2002), Harmon et al. (2003), Fersterer and Ebmer (2003), and Dougherty (2005) show that for both developed and developing countries human capital has a positive impact on earnings.

Psacharopoulos (1981) studied investment in human capital and returns to education. Psacharopoulos divided the returns to education into four types. Type one is the returns to primary education and is the highest rate of returns among all educational levels. Workers with primary education will gain much higher earnings compared to those who have no schooling. Type two is the private returns, that is, benefits are after-tax, after deduction tax-exempted family allowances paid to parents of child still school, and

costs refer only to the part of schooling expenses that the individual actually pays either direct or indirect cost (Psacharopoulos, 1972, 1981 and Blaug, 1967). The private rates of return are generally higher than social rates of return, especially at the university level. Typically, social rates of return are viewed as being difficult to calculate and, thus, have been explored less widely than private rate of return (Ashworth, 1998) such as in early earnings equation model (Mincer, 1958, 1974), social rates of return has not been discussed.

The rate of return of a college diploma is much higher than other levels of education and is also higher than social returns. The social return to education refers to the costs and benefits to society of investment in education, which includes the opportunity cost of having people not participating in the production of output and the full cost of the provision of education rather than only the cost borne by the individual (Psacharopoulos, 1972 and Sianesi, 2003). The social benefit includes the increased productivity associated with the investment in education and a host of possible non-economic benefits, such as lower crime, better health, more social cohesion and more informed and effective citizens (OECD, 2007). Meanwhile Blaug (1967) defines the social rate of return as that discount rate that equates the present value of the incremental earnings associated with extra education, multiplied by a, to the present value of the total cost of that education. To calculates the social rate of return, He used the following procedure: first, the mean net lifetime earnings stream associated with each educational level was discounted at appropriate rates of interest, to obtain gross present values for each level of education. Second, the direct costs per successful candidate for each educational level were similarly discounted and net present values were obtained such as gross discounted returns minus discounted costs.

Psacharopoulos (1972) calculates the average earnings of a male college graduate in the United States in 1959 that was $9,255 and the corresponding earnings of a high school graduate $6,132. Therefore, a male with college qualification would earn annually over his working life a net $3,123 compared to a male with secondary education. There were a certain amount of money needed to pursue higher education; the cost of four years of college in 1959 is about $14,768. This includes both direct expenses such as tuition fees and books, as well as indirect costs in the form of foregone earnings while studying. A simple calculation shows that the annual yield of this particular investment is about 20 percent (3,123 : 14,768 = .21). The limitation of this calculation assumes that the benefit will remain constant over time and that it will accrue forever.

Type three is all rates of return to investment in education, which means those additional years of schooling at all levels of education will increase workers' earnings. Finally, type four is the rate of returns to education in developing countries, which are relatively higher compared to the corresponding returns in developed countries due to the accessibility to schooling, which is widely available in almost all developed countries. This equal access enables people to gain the same opportunities in the labour market. Meanwhile, there is lack of opportunity for people in developing countries such as Indonesia to access higher education. Several contributing factors to this issue include low earnings, which make higher education unaffordable for many people. Furthermore, reflecting the law of diminishing returns to the formation of human capital, the returns to all levels of education largely decline according to the level of the country's per capita income.

Psacharopoulos (1981) divided returns to education into two groups: private and social returns. In the case of Indonesia, based on a survey conducted in 1977, the highest

private rates of return to education are at primary school level, with 25.5 per cent, and at secondary school at 15.6 per cent. The rates of return have been estimated based on public sector workers' earnings, since the public sector has become the major employer of the educated labour force in the developing countries. Moreover, Psacharopoulos (1981) found that the social returns of investment in education in 22 Less Developed Countries (LDC) were 27, 16 percent for secondary school and 13 per cent for higher education.[12] Meanwhile Blundell et. al (2001) define the rate of returns to education into three distinct ways: (a) the private return, that is made up of the costs and benefits to the individual and is clearly net of any transfers from the state and any taxes paid, (b) the social return which highlights any externalities or spill-over effects and includes transfers and taxes and (c) the labour productivity return relates to the gross increase in labour productivity. According to Psacharopoulos (1981), the post-versus pre-tax treatment of earnings does not make a big difference in a rate of return calculation. It is the addition of the direct cost of schooling that mainly accounts for the fact that a social rate of return is lower relative to a private rate of return.

Ashraf (1994) examined the returns to education for blacks and for whites over a twenty-year period, 1967-1986, in the United States. He found that the return for black workers with college degrees was much higher than those for white college graduates. However, the returns for black and for white high school graduates were much closer to each other. Ashraf further found that the union-member appeared to be a strong determinant of earnings across both races during the entire survey period. However, the

[12] A social rate of return is calculated the public point of view, that is, benefits before-tax and includes the full costs of the particular educational level. The social rates are to be compared with the returns to alternative social investment opportunities (like building a dam), the private rates on the other hand are to be compared with private investment opportunities (like the after-tax yield of a business firm) (Psacharopoulos, 1972)

gains from unionization remained considerably higher for blacks than for whites during the entire period.

Investing in the education sector has been viewed as an attempt to improve human capital and personal productivity and to generate higher earnings. According to Chuang and Lai (2010), the return to education provides a general overview of labour force quality, which is an essential determinant of a country's economic performance and educational policy. The investment in education and its effect on earnings are well-documented through investigations in multiple settings. In particular, for Asia, Psacharopoulos and Patrinos (2004) compiled their findings on several countries in the South Asia region and concluded that returns appear to increase with levels of education. They emphasized that members of the labour force who graduated from higher levels of education enjoy the opportunity of obtaining higher earnings. According to Psacharopoulos and Patrinos, Pakistani workers who attend higher levels of education earn the highest returns in the region by 31.2 per cent compared to India and Sri Lanka. Furthermore, Asadullah (2006) added the case of Bangladesh to the compilation of findings in South Asia. His research supported the finding that an additional year of schooling increases earnings by 7 per cent. Although the findings in Bangladesh revealed that primary education provides the lowest returns, Asadullah argued that this does not necessarily imply that investment in primary education is less substantial than other forms.

Another interesting investigation into schooling and returns was conducted by Chuang and Lai (2010) using Taiwan as a case-study. In that country, nine years' compulsory education was initially implemented through its educational policy. However, in 1990 the Taiwan government expanded the policy. As a result, more young people currently have access to college-level education in Taiwan than ever before. The authors found that the return to education was higher before the implementation of the

expanded policy on university access. Therefore, according to the researchers the increased supply of university or college graduates had a marginal impact on returns to education. This study supported the notion that the estimated marginal treatment has an effect on the heterogeneous nature of human capital, which therefore confirms that there are various rates of returns to education among individuals.

Earlier, Gindling et al. (1994), investigating changing returns to education in Taiwan, found the highest returns among college graduates. Their findings are different from the widely reported conclusion that returns to lower levels of education are higher than returns to university levels. However, in view of Taiwan's educational expansion, the returns to education for those who attended university/college levels may fall. Therefore, Gindling et al. (1994) suggested that, in order to keep returns to education stable, relative demand for more skilled and educated labour must increase. Furthermore, the relative demand may increase because of the needs of industry, particularly technological change in the country. This condition may lead to a change in employment composition.

Changes in returns to education have occurred in India during the last decade. Duraisamy (2002) estimated and evaluated the changes in returns to education for workers in waged employment, controlling for gender, age cohort and location in terms of rural–urban divide during the period 1983-1994. This study found that wage returns increased with the level of schooling up to the secondary level. An additional year of college education had a lower return compared to secondary level but higher ones than primary and middle levels respectively. He concluded that the private returns per year of schooling in primary, secondary, higher secondary and college levels of education were 7.9, 17.3, 9.3 and 11.7 per cent respectively. Further, the researcher noted that the returns to an additional year of women's education were higher than those to an additional year of men's at the lower secondary and higher secondary levels, particularly at the secondary

level where the wage gains to women's education were more than twice those of men's. Men received 6.4 and 8.9 per cent returns on lower secondary and higher secondary levels compared to 10.3 per cent and 11.8 per cent returns on the same levels for women.

There is a consensus among development economists, such as Todaro (2009) and King and Hill (1993), that the improvement in women's education has had a significant impact on economic growth. There is a strong negative relationship between women's education and the fertility rate: the higher the level of women's education, the lower the fertility rate. Women are tending to spend more time in the paid labour market, which leads to them having fewer children. The consensus is also understood as beneficial development through the positive effect of human capital accumulation on economic growth. Gallaway and Bernasek (2004) examined the relationship among gender, literacy and occupation. They noted that feminist economists tend to view women's education as a critical contribution to women's empowerment and status as well as enhancing their socio-economic development. Feminists pay more attention to women's education as a way of improving women's lives, which also has the further benefit of socio-economic development. By expanding women's opportunities to earn an income and participate more in the family, it may be possible to solve community problems such as poverty and other social crimes. Gallaway and Bernasek agreed that, for economic development, education plays a pivotal role; therefore, they suggested that people should receive a basic education, which increases people's chances of gaining better jobs and, hence, leading better lives. In the future, this will reduce gender discrimination in education and job opportunities.

There has been rising inequality in personal incomes in many countries around the world. This has become a real phenomenon, especially in developing countries where the personal income gap is huge. Fersterer and Ebmer (2003) found two forms of income inequality: the 'inequality within skills' group and 'inequality across skills' group. Wage

inequality within skills is caused by the increasing division of jobs, new technologies, and the reduced efforts by unions and governments to compress wages. Meanwhile, inequality across skills is caused by labour force demand for and supply of skills. Further, they found a downward trend in the evolution of returns to schooling. The average returns to an additional year of schooling fell from 11.3 per cent to 6.6 per cent for females and from 9.4 per cent to 6 per cent for males between 1981 and 1997. Fersterer and Ebmer estimated the rate of return from schooling using an Austrian dataset from the period 1981-1997. However, the study did not provide any additional independent variables, such as type of job and marital status, which might contribute to earnings and the sources of earnings. Moreover, the study did not explain the difference between males' and females' earnings.

Harmon et al. (2003) conducted a simple analysis of average earnings for different levels of education. They defined spending on education as a private decision to invest in human capital. The private return to education is disproportionately higher compared to other types of investment with similar degrees of risk. They applied multivariate regression to estimate the rate of return to education in the United Kingdom. They found that an additional year of schooling has increased returns by between 7 to 9 per cent, which could be considered at the upper rate of return to schooling in Europe, where Nordic countries in particular have low returns to schooling. In OECD countries, there is a concern that an excess supply of well-educated and skilled workers could lead to low rates of return to schooling.

Another study, by Psacharopoulos and Patrinos (2004), noted that the returns to investment in education have been discussed since the 1950s. They distinguished two types of returns to education: private return and social return. The researchers showed that an additional year of schooling would lead to a 10 per cent increase in earnings. The highest returns to education were recorded in low- and middle-income countries. Average

returns to schooling were highest in Latin America and sub-Saharan Africa. Among other countries, returns to schooling for Asia are around the global average. Lower returns to schooling were noted in high-income countries of the OECD, the Middle East and North African countries. Over the past twelve years globally, average returns to schooling have decreased by 0.6 per cent; at the same time, the average level of schooling has increased. Women produced higher returns to investment in education. In primary education, men gained 20 per cent while women gained only 13 per cent. However, in secondary education, women gained 18 per cent while men gained 14 per cent.

More recently, Dougherty (2005) conducted an investigation using the National Longitudinal Survey of Youth (NLSY) data of 1979. The researcher estimated the rate of return to schooling by applying panel data methods and the standard Blinder-Oaxaca wage decomposition method used to obtain gender earnings differentials. Moreover, the researcher found that the returns to schooling in the US tend to be higher for females than for males even though females tend to earn less than men. Education has increased women's skills and productivity and has provided an extra return to women. In addition, this finding tends to reduce the gap in gender earnings differentials.

Duflo (2004) studied the effect of "presidential instruction" (INPRES), also known as the Primary School INPRES school construction program, which is considered the most rapidly implemented primary school program undertaken in Indonesia. As a result of the oil boom, 61, 807 new schools were constructed between 1973 and 1974 and between 1978 and 1979. Using the 1995 Intercensal Survey of Indonesia (SUPAS), she found that each new school constructed per 1,000 children was associated with an increase of 0.25 to 0.40 years of schooling and produced 6.8 per cent to 10.6 per cent higher returns to education. The program increased the average length of schooling through the primary school induced program.

Women's access to high school and college is still limited in many developing countries around the world, including Indonesia (Behrman and Deolalikar, 1995). According to Indonesian Statistics (2009) primary school attendance by females has reached 28.9 per cent, which is almost equal to that of males at 28.5 per cent. A slightly higher percentage of women (19.3 per cent) are educated at junior secondary level compared to men (18 per cent). The percentage of females educated at senior high school stands at 12.3 per cent, lower than that of men at 14.2 per cent. Meanwhile, 2.7 per cent of women have university degrees, lower than the figure for men (3.2 percent). Factors impeding women's access to higher education include the limited number of schools and universities and the distance of these institutions from their potential students. Early marriage for girls is also thought to be a reason why most women do not pursue higher education (Setiadarma, 1993, Sulaiman and Gasim, 1998).

However, according to Susilowati (2005), the gender earnings inequality in the Indonesian labour market is not mainly determined by gender differences in human capital but is substantially related to gender differences in family role constraints. A variety of studies such as those by Hill (1979), Becker (1985) and Waldfogel (1997a) found that married men received higher earnings than their unmarried counterparts, who presumably had lower financial responsibilities to families.

The conventional view is that increasing female education can reduce the gender gap provided that the rise in women's human capital is able to reduce the gender earnings gap. In the relevant literatures such as Becker (1964), Mincer and Polacheck (1974) also recorded that education can increase women' employment choices, giving them more independence and greater bargaining power. Increasing women' human capital is not sufficient to reduce the earnings gap. In fact, the role of the family seems to have a great influence on narrowing the income disparities. Fundamental change in the household division of labour is required to reduce the gender earnings differential. Along with

increased economic growth, a greater shift of employment into manufacturing and out of the agricultural sector and higher participation by female workers in the paid labour market will potentially enhance overall socio-economic development. Differences in the average pay of men and women in the same occupations can arise due to various factors (Nor, 1998 and Susilowati, 2005). Some may result from the use of different measures of pay. Women typically work fewer hours than men and are less likely to receive lower pay than men.

4.4 Gender Discrimination and Earnings Differential

Historically, Adam Smith (1776) was the first economist to identify that wage differentials are mainly determined by differences in occupations. Smith noted that wages will adjust to produce stability in the labour market (Smith, 1776). Occupational characteristics (e.g., pleasant and unpleasant work) and work entry preparation are among the variables that affect the amount of earnings. For example, unpleasant jobs which require heavy work and longer hours will pay more than jobs requiring shorter working hours. Meanwhile, the more time spend in job preparation such as schooling or training, the higher the payment (Ismail and Noor, 2005).

Over the last few decades the role of women in the labour market has increased sharply in almost all types of occupations, and women have gained more access to job opportunities; however, wage differentials between male and female workers remain an issue impeding greater economic and social development in many countries, particularly developing countries. Mincer and Polacheck (1974) argued that women's lack of opportunities to enter the job market was mainly due to their household commitments and child-rearing responsibilities. Female workers spent much less time in the workplace than males and also tended to withdraw from jobs earlier because of family matters, particularly when they started having children. These responsibilities influence women's

earnings in three ways: first, they reduce women's work experience and length of job tenure; second, they deplete women's human capital; finally, they depreciate in-job training experience.

Wellington's (1993) studies on the male-female wage gap noted some changes from 1976 to 1985. She found that the mean of the explanatory variables indicated that the differences in the average characteristics between males and females were narrowing. Women were improving their skills in terms of training and work experience.

Marriage is commonly viewed as a factor causing earnings discrimination between male and female. For female, marriage may signal to employers the possibilities of higher rates of absence and turnover. Meanwhile, for men, marriage represents stability or job attachment, which may push them to generate a higher income due to their financial responsibility to the household (Hill, 1979), this is in line with labour economists views that married men earn substantially more per hour worked than men who are not currently married (Korenman and Neumark, 1991). Gannicott (1986), in his economic and cultural study in Taiwan, had underlined these aforementioned effects of marital status along with experience and company size on wage discrimination.

Furthermore, Goldin and Polachek (1987) investigated whether family responsibilities contribute to women's productivity in the workplace. Employers perceive married women to be less productive and mobile, resulting in them being less likely to invest in women than in men workers. Therefore, women will have lower training and lower wages compared to male workers despite having the same set of skills or qualifications; this ultimately leads to the gender earnings gap in the workplace.

Using data from the ninth wave of the Panel Study of Income Dynamics, Hill (1979) found that workers with greater financial responsibilities for their families receive higher wages. This may be because workers with greater financial responsibilities are more willing to work harder and take unpleasant jobs in order to earn more. Furthermore,

the study found that marriage has a significant effect on women's job performance compared to their male counterparts. Even though married women are less stable workers, for example work for fewer hours, work less harder on the job, have higher absenteeism from work and are likely to resign from job due family concern than single women (Ahituv and Lerman, 2011), the study also finds no evidence of a detrimental effect of marriage on wages for women (Hill, 1979). The analysis has indicated that the number of children is a good proxy variable for different work history and labour force attachment for white women.

Cotton (1988) decomposes wage differentials between two groups, white and black. Using a 1 per cent sample of the Public Use Samples of the 1980 census in the United States, he found that the log hourly wage for white males was 2.0125 while the log wage for black males was 1.7987; thus, the resulting log wage differential was 0.2138. In terms of discrimination, the decomposition results show that around 49 per cent of the log wage difference was due to white males' skill or productivity advantage evaluated as it would have been in the absence of discrimination.

Ashraf and Ashraf (1993), estimating the gender wage gap in Rawalpindi, Pakistan, found high levels of discrimination against women. The Oaxaca model was used in their study to derive estimates of gender discrimination in earnings. The results suggested that a wage gap exists between male and female wages in Pakistan, and much of it is directly attributable to discrimination. The discrimination component of the earnings gap appears to be considerably greater than the portion of the earnings differentials that can be explained by differences in productivity characteristics of males and females.

An array of investigations has reported that male workers receive higher payments than female workers even though they possess the same qualifications (Darity and Mason, 1998). Due to this wage discrimination against women, a range of impacts can be found

in inefficient use of human resources, and women are discouraged from improving their human capital, which in turn causes them to prefer to be self-employed or even unpaid family workers rather than employees. (Behrman and Zhang, 1995)

Polachek (1975a, 1981) identified that gender wage differentials are largely influenced by differences in human capital. The experience-related variables such as years of experience and job tenure also explain the significant effect on the male-female earnings gap. However, the existence of wage discrimination tends to be narrowed by the factor of level of education (Prisco, 1999). Lerman (2000) has supported the implications of education for bridging the earnings gap, particularly for female workers. Lerman noted that the more educated the workers, the higher wage growth rate they obtain. This study investigated wage growth between 1984 and 1995, showing that education reduces the male-female wage gap at all educational levels by 44 per cent.

Arabsheibani and Lau (1999) used data from the Russian Longitudinal Monitoring Survey and found the age factor to be positive and highly significant, suggesting that as women become older the probability of their participation in the labour force increases, albeit at a decreasing rate. Furthermore, the findings show that the effects of education at all levels, including technical and vocational studies, are also positive and significant, indicating that women who have studied and completed higher education are more likely to participate in the labour force. The findings suggest that married women are more indecisive than single women about work.

Scholars such as Bullard and Prisco found that the gender wage differential was declining in the United States. The reasons for this differential are related to occupation, experience and educational attainment (Bullard, 1999). In the same year, Prisco (1999) reported that the earnings gap in Italy also narrowed as the educational level increased.

4.5 Gender Discrimination and Earnings Differentials in Indonesia

The estimation of rate of returns to schooling for a nation has been the focus of labour economics literature. However, despite the limited research available on gender earnings differentials in Indonesia, several studies have estimated the return to education in Indonesia. For example, Byron and Takahashi (1989), Behrman and Deolalikar (1991, 1993, and 1995) and Deolalikar (1993) found a positive relationship between workers' education and experience and earnings for both males and females. Interestingly, they found that female workers gained higher earnings from education than males did. The result also shows that university education is the highest in terms of rate of return to education. However, this study excludes from the estimation some important explanatory variables such as marital status, number of children in the family and residential location, which can affect workers' earnings.

Byron and Takahashi (1989) examined the return to education in the Indonesian labour market using National Social Economics Survey (SUSENAS) data. In general, the returns to education in every additional school year increased by 15-17 per cent; therefore, 66 per cent of the earnings can be explained by education and experience. The research showed that the returns were mostly higher in the private sector than in the public sector. Compared to other countries, this rate of return to education in Indonesia was the highest. Moreover, sex discrimination was present in returns to education between genders. However, when the female experience variable is included in the estimation, the discrimination was insignificant. Unlike Behrman and Deolalikar's study, which covers all areas in Indonesia, Byron and Takahashi's study covers only urban Java including both public and private sectors.

Behrman and Deolalikar (1991) estimated the rates of return to schooling in Indonesia using data from the Indonesian National Labour Force Survey (SAKERNAS). The SAKERNAS data were gathered from the Indonesia Statistics Agency in 1986. The

research focused on 25,555 individuals over ten years of age from a population of 225,000 who received wages as paid employees. The estimation showed no significant difference by sex for sub-primary, primary and general junior secondary schools. However, for vocational junior high schools, and both vocational and general secondary and post-secondary high schools, women obtained significantly higher wages than men. The rates of return to different levels of schooling ranged from 5 per cent to 11.7 per cent.

The standard assumption or time spent in each level of school level in Indonesia are 3 years for sub-primary school, 6 years for primary school, 9 years in schooling who have completed junior secondary school, and 12 years of schooling for senior secondary education. Until 1990s, before implementation of nine years compulsory basic education, there are quite significant number of school repetition and dropouts in Indonesia (Behrman and Deolalikar (1991). To resolve this issue, Behrman and Deolalikar (1991) did some adjustment for the time spent in each schooling level. To obtain the Mincerian private rate of return, they used two alternative assumptions. First, everyone has average repetition and dropout rates (homogeneity). They assume that a student who drops out in a given year drops out at mid-point of the year, so the time spent in school during dropout year is 0.5 years.

$$r_i + d_i + s_i = 1. \tag{4.8}$$

Where N_i be number of individuals that enter grade i, r_i is the repetition rate, d_i is the dropout rate, and s_i is the success rate for that group. Behrman and Deolalikar define the expected years spent in school for individual in each school levels:

$$y_{sp} = \sum_{i=1}^{6} d_i \sum_{j=1}^{\infty} (j - 0.5) r^{j-1} + \sum_{i=1}^{5} s_i \sum_{j=1}^{\infty} j r_j^{i-1}, \tag{4.9}$$

$$y_p = \sum_{i=1}^{6} \sum_{j=1}^{\infty} j r_i^{j-1} + (N_7 / N_1) \left[\sum_{i=7}^{9} d_i \sum_{j=1}^{\infty} (j - 0.5) r^{j-1} + \sum_{i=7}^{9} s_i \sum_{j=1}^{\infty} j r_i^{j-1} \right], \tag{4.10}$$

$$y_j = \sum_{i=1}^{9}\sum_{j=1}^{\infty} j r_i^{j-1} + (N_{10}/N_1)\left[\sum_{i=10}^{12} d_i \sum_{j=1}^{\infty}(j=0.5) r_i^{j-1} + \sum_{i=10}^{11} s_i \sum_{j=1}^{\infty} j r_i^{j-1}\right], \quad (4.11)$$

$$y_s = \sum_{i=1}^{12}\sum_{j=1}^{\infty} j r_i^{j-1} + (N_{13}/N_1)\left[\sum_{i=11}^{16} d_i \sum_{j=1}^{\infty}(j=0.5) r_i^{j-1} + \sum_{j=11}^{15} s_i \sum_{j=1}^{\infty} j r_i^{j-1}\right], \quad (4.12)$$

$$y_u = \sum_{i=1}^{16}\sum_{j=1}^{\infty} j r_i^{j-1}. \quad (4.13)$$

Where y_k is the expected years of schooling for the schooling category, $k = sp$ for sub-primary, $k = p$ for completed primary, $k = j$ for completed junior secondary, $k = s$ for completed university.

Equation 4.9 explains the expected years spent in school for individuals who start but do not complete primary school. The first right-side term presents the time spent in the year in which individual dropout which may be in any of the first six grades (the sum is from one to six). Under previous assumption that individual may drop out in the half year of the grade in the school, so the expression is in the (j - 0.5) term if the individuals does not repeat that grade before dropping out (j = 1). However, individuals may repeat that grade before dropping out, so there is the sum over. So, in the equation above, Behrman and Deolalikar mentioned the sum over j which is to go from one to infinity since we do not know length of repetition of any grade. The second right-side term shows the time spent in primary grades in which perhaps after repetition in any grade (sum is from one to five) an individual is successful. Similarly, equation 4.10 gives the expected years of schooling for those who are in the completed primary school. The first right-side term provides the number of years expected to be spent in primary school included repetition rates. The entire second right-side bracket refers to the expected time that primary school graduates who enter but do not complete junior secondary school. The multiplicative terms in front of the brackets are the probability that an individual who enter primary school also enters junior secondary school. Equation 4.11 – 4.13 are similar expressions given for junior secondary completers, senior secondary completers, and

university completers (assume the individuals need 4 years to complete undergraduate degree).

Second assumption, zero repetition and dropout rates for those who enter the next schooling level (heterogeneity). In fact, there are not all of those who complete a given schooling level enter the next level school. Equation 4.9 – 4.13 then can be used to calculate the expected years spent in the school with the repetition and dropout at each schooling level. The advantage of this study is able to correct the understate the private and social costs of schooling and overstate the private and social returns to schooling. When time spent in each level of education was corrected, Mincer earnings model is used to calculate rate of return. However, this study does not examine the repetition and dropout in the higher education level. Whereas post-secondary education provides significant return to education. Typically, it seems to be difficult to calculate the repetition in higher education since the teaching and learning activities are quite different from secondary level. Further, this study applies in the context of two decades ago where the compulsory basic education was not introduced (using 1986 Sakernas data). Since nine years compulsory basic education implemented in 1989 and reinforce with presidential decree in 1994, the school enrolment, repetition and dropout decline gradually. Moreover, in 2013 the government of Indonesia redesigns the curriculum system for primary school which eliminated school repetition in each grades (Aulia, 2013).

Using a 1986 dataset from the Indonesian National Labour Force Survey (SAKERNAS) Behrman and Deolalikar (1993, 1995) found that an additional year of schooling increases wage rates by between 6 per cent and 11 per cent for males and by 6 per cent to 17 per cent for females. The demographic data showed that the male labour force was 2.8 years older than the female labour force. In addition, average wage rates for males are 85 per cent greater than for females. The data indicated that male workers had higher levels of education than female workers. The estimates indicated a positive

impact of age on wages for both males and females. For females, the number of household members under ten years of age reduced the probability of them participating in waged labour. However, for males it increased the probability of waged labour. In addition, they found that the effect of an additional year of schooling was in the 2.5 to 11.4 per cent range for wage rate and the 2.8 to 9.7 per cent range for earnings. The return to post-schooling experience was greater for males than for females; males experienced higher wage rates and earnings. However, it was found that the percentage increases in wages with post-primary schooling was greater for females.

Deolalikar (1993) estimates the pecuniary return to schooling for adult male workers and women who have completed their schooling using national social economy survey (SUSENAS) data. In estimating the school earnings function, He used a semi-log earnings (E) function in which the right-side variables are dichotomous variables for the time different schooling categories recorded in the survey (D_{id}), quadratic in age (A), and an independent and identically distributed (i.i.d.) disturbance term (ε):

$$\ln E_i = \alpha^j + \sum_d \beta_d^j (A) D_{id} + \gamma^j A_i + \lambda^j A_i^2 + \varepsilon_i^j, \qquad (4.14)$$

where *i* indexes the individual and j indexes gender. This study used of the nine dichotomous variables for the different schooling categories permits considerable nonlinearities in the schooling impact, as well as different effects for vocational than for general secondary schooling and diploma than university post secondary schooling. He allows all the schooling coefficients of the earnings function in equation 4.14 by interacting with age. Deolalikar uses standard earnings function model with the Heckman selectivity correction that being identified by marital status, household non- labour income and spouse's age. This earnings function is valid only under the assumption that hours worked are exogenously set. However, majority of employment in Indonesia is informal sectors where hours worked are highly variable and choice-based especially for

female, the standard earnings function with its strict identifying restrictions for sample selectivity is untenable. As a result, he estimates an expanded earnings function that includes marital status, non-labour income and spouse age without controlling for sample selectivity.

Using above equation method, Deolalikar (1993) found that males have significantly lower returns to schooling than females at secondary and tertiary levels of schooling. The return for university education is 25 per cent higher for females than for males and for diplomas it is 53.5 per cent higher for females. The result also showed a strong indication of age differences in returns to schooling, with the older cohort gaining significantly higher returns to schooling for both males and females. The estimation does not indicate that differences in age would affect gender earnings.

Behrman and Deolalikar (1995) focus on semi-log earnings (*E*) wage rate (*W*) in which the explanatory variables are dichotomous variables for the nine level education (*Di*), quadratic in age (*A*), unobserved fixed effects (*f*), and independent disturbance terms with constant variables and mean zero (*e*).

$$\ln E = a_0 + a_1 \sum_{t=1}^{9} D_i + a_{10} A + a_{11} A^2 + a_{12} f + e_e, \tag{4.15}$$

and

$$\ln W = b_0 + b_1 \sum_{t=1}^{9} D_i + b_{10} A + b_{11} A^2 + b_{12} f + e_w, \tag{4.16}$$

where *a*'s and *b*'s are the respective parameters to be estimated and the subscripts on the *e*'s refer to respective relations. Under the standard assumption that year of schooling and age are predetermined, and these two equations can be thought of as approximations to the reduced form relation that determine an individual's earnings and wage rate in the paid labour market.

Behrman and Deolalikar (1991, 1993 and 1995), Deolalikar (1993), and Byron and Takahashi (1989) becomes the most crucial research examining gender differences in returns to education in Indonesia labour market. Their results presented estimates of gender earnings differences with regard to educational attainment. However, these studies noted numerous shortcomings and limitations, which deserve further research to fill the gap in the literature. First, the datasets used to measure the earnings differentials between males and females are yearly-based cross-sectional data which consequently failed to determine the trend in earnings. For instance, in their study Behrman and Deolalikar used the 1986 Indonesian National Labour Force Survey (SAKERNAS) dataset, while Byron and Takahashi used the 1981 Indonesian National Socio-Economic Survey dataset. Since the previous studies were confined to one-year periods only, the change and trend in earnings based on educational change was not reported. In order to bridge this gap in the literature and to capture the trend and change in the pattern of earnings, this thesis examines gender earnings differentials in Indonesia in three periods: 1989, 1999 and 2009; this has not been done in any previous studies on Indonesia.

Second, there are a limited number of studies examining the return to education by gender in Indonesia. The evidence shows that, during the last two decades, females' school participation has increased significantly, especially in secondary and tertiary education where the school enrolment rate is almost the same for males and females. Increasing enrolment in education has different effects on earnings. Furthermore, the previous study by Behrman, Deolalikar and Byron was conducted before the compulsory basic education law was enforced in 1989. It was confirmed that the sample in this latest dataset has higher school attainment since the compulsory basic education policy required every citizen aged 6 to 15 years to attend nine years of basic education free of charge. In addition, the sample dataset used in this study is 123,755, which is much larger than the

1986 sample, which comprised only 30,227 individuals. This larger dataset is expected to elicit more representatives of empirical results.

Third is the inclusion of new variables and hypotheses in the analysis, which are expected to have more robust contribution on the results. This study uses more explanatory variables compared to the existing ones. The existing literature does not include certain variables that are expected to have a deterministic role on final earnings, such as number of children in the family, marital status and residential area. The independent variables on which this thesis focuses are education, age and working experience. We argue that the inclusion of these variables will have significant effects on returns to education and earnings. Therefore, this study presents a more robust explanation of male-female returns to education in Indonesia.

Unlike Behrman and Deolalikar's (1995) study where education was measured by years of schooling. Furthermore, in their studies Behrman and Deolalikar (1995), Byron and Takahashi (1989), and Psacharopoulos (1973) did not apply any gender earnings decomposition methods. In order to analyze the sources of gender earnings differentials, this study uses the education attainment as set dummy variables. Dummy variables are used to examine workers' educational qualification; this will help to classify their educational attainment, whether they graduated from elementary school, junior high school, senior high school or vocational high schools and universities. If years of schooling were used, then the comparison among whom graduated from general senior high school and vocational senior high school is unclear because both of schools have 12 years of education. Another advantage of estimating the rate of return by the dummy variable method rather than the years-of-schooling-squared method is that a great deal of sensitivity is added (Psacharopoulos, 1981). A decomposition analysis proposed by Blinder-Oaxaca (1973) is applied.

Finally, this study re-examines the work of previous studies on the Indonesian labour market with a more comprehensive method with data availability. The result of this study will explain the structure of the Indonesian Labour market and provide important information for policy-makers in making more efficient use of human resources to improve the productivity of the labour force. It explores the best strategy options to discourage or overcome any gender discrimination that may exist in the Indonesian labour market. In macro terms, this study presents important information for policy-makers to illuminate various efforts on which the government should focus in order to enhance workers' and employers' returns.

Feridhanustyawan et al. (2001) empirically estimated the wage equation for female and male workers in Indonesia using the 1986 and 1997 National Labour Force Survey (SAKERNAS) micro data. They found that wage discrimination existed in the Indonesian labour market. However, the contribution of the female-male wage differential was declining. The decomposition analysis shows that the main factor contributing to the smaller actual wage gap was the reduction in discrimination, especially for uneducated women. Education continued to be an important factor contributing to the closing gender gap. In rural areas, the wage gap between men and omen declined slightly and the smaller discrimination effect has been equalized by widening the endowment gap.

Using data from SAKERNAS (1996, 1999, 2002 and 2004), Pirmana (2006) examined the earnings inequality in Indonesia based on individual characteristic factors such as education, experience, residential location and socio-economic characteristics. This study attempted to investigate the significance of those factors for the earnings inequality before and after the financial crisis hit Southeast Asian countries in 1998. The study included more comprehensive variables in the estimation such as status as head of household, work sector and province in which individuals reside and work. The Mincerian (1974) earnings equation and Blinder-Oaxaca (1973) methods are used to estimate the gender earnings differential. The results showed that the profile of gender earnings inequality was an inverted-U shape with male-female earnings, narrowing as

educational attainment increased and reaching a plateau at the post-secondary level before tapering off. The result of estimating the earnings equation also showed that the human capital factor, socio-economic factors and residential location significantly affected individual earnings in Indonesia. The Blinder and Oaxaca's decomposition results showed that 41.6 per cent of the earnings gap was caused by the endowment effect and 58.4 per cent was attributed to the discrimination effect. The results clearly indicated a significant gender wage gap in Indonesia. The study focused on the gender differences in earnings before the financial crisis (using data SAKERNAS 1996) and after the financial crisis (SAKERNAS data 1999, 2002 and 2004). Unfortunately, the study failed to address the trend of earnings inequality in the long run, for example in the past three decades.

Furthermore, Pirmana (2006) found that there were significant differences in workers earnings between provinces and region. Some of this was due to cost of living differences. Manning (1997a) argued that the regional labour market structure and developments between Java and Outer Islands of Indonesia contribute a significant difference among regions. Akita and Szeto (2000) show the mean of monthly expenditure by urban-rural location and by geographical region (Java and Outer Islands). They found that the urban-rural disparity was quite significant in 1993 and 1996. The mean urban expenditure in both Java and the Outer Islands was approximately twice the mean rural expenditure in 1993 and 1996. Another important factor was the rapid growth in manufacturing employment that caused the deepening inequality between the urban sectors of Java and the Outer Islands (Manning, 1999).

Another study using the Indonesia Family Life Survey dataset was conducted on the effect of daughters moving away from their parents upon their marriages, which is known as virilocality. The effect was disadvantage for females in terms of education and other investments. This research confirmed most of the results in developing countries in that daughters had lower educational levels compared to their male siblings. In addition, the mortality rate for daughters was high (Levine and Kevane, 2003). They found no evidence to support the notion of different treatment of and investment in males and

females or post-marital residential location in the Indonesian family system. However, male children are more likely than female children to inherit wealth from their parents when parents die in virilocal regions.

More recently, study by Granado et al. (2007). They focused on investment in Indonesia's primary and secondary education. They found that the total number of pupils in Indonesian public and private schools was 50.6 million, and the total number of schools was 270,000. The distribution of students was 5 per cent for pre-school, 59 per cent for primary education, 17 per cent in junior secondary education, 13 per cent in senior secondary education and 6 per cent in higher education. The enrolment rate in primary schools in Indonesia after the 1970s has increased significantly: from 72 per cent in 1970 to 91 per cent in 2005. The enrolment rate for junior secondary school has also increased from 18 per cent in 1970 to 62 per cent in 2005. The researcher computed the rate of returns to education and age group based on National Labour Force Survey data in 2006. The data covered 178,228 individuals who received salaries and wages in the Indonesian currency. The research reported that the social return for primary education was 4 per cent. The senior secondary level achieved the highest rate of return with 28 per cent, slightly more than the junior secondary school level with 25 per cent.

Pradhan (1998) studied enrolment and delayed enrolment of secondary school-age children in Indonesia. Using the National Survey on Social Economy (SUSENAS), the study focused on the 13-18 age range in terms of participation in school enrolment and delayed school enrolment at secondary high school level. He found that parents' education affects school enrolment and delays school enrolment. Father's education has a stronger impact than mother's education for both boys and girls; however, mother's education has a key impact on reducing delayed enrolment. In general, parents' education has a stronger impact on boys than on girls. Furthermore, the study found that having a mother working in agriculture reduced a child's school enrolment at the appropriate level. The effect is stronger for girls than for boys. This indicates that mothers who work on

farms prefer to have their children working alongside them in the fields rather than sending them to school.

It is a common belief that vocational education produces significant outcomes in employment opportunities in the labour market. For example, Neuman and Ziderman (1989) report earnings gains of 10 per cent for Israeli vocational school graduates working in training-related jobs over workers who attended general education. Arum and Shavit (1995) found that, although vocational education inhibits a student's likelihood of attending college, it reduced the risk of unemployment and increased the student's chances of employment as a skilled worker. However, there are also two strong arguments against vocational education (Chen, 2009). First, economists believe that vocational education has a lower benefit-cost ratio. Psacharopoulos (1987) argued in this regard that the costs of vocational education are considerably higher than those of general education, while their benefits are comparable. Second is the educators' and sociologists' argument. Arum and Shavit (1995) argued that vocational education reduced a student's chances of attending college due to the restricted curriculum.

In the context of Indonesian vocational education, the Ministry of National Education of Indonesia began to expand the vocational schools (MoNE, 2006). The main reason for this policy is to increase the number of people ready to work in the labour force, especially among those who are not continuing to tertiary education. In responding to this policy, Chen (2009) examined the labour market outcomes associated with vocational school education in Indonesia, and compared these with outcomes associated with general senior high schools. Using two waves of panel data from the 1997 and 2000 Indonesia Family Life Surveys (IFLS), the study found the following:

(1) Attendance at vocational secondary schools brings neither market advantage nor disadvantage in terms of employment opportunities or earnings premium;
(2) Attendance at vocational secondary schools leads to significantly lower academic achievement as measured by national test scores;

(3) There is no stigma attached to attendance at vocational schools that results in a disadvantaged situation with regard to access to tertiary education.

The findings of this study do not support the government policy for the expansion of vocational education at secondary level. The study by Newhouse and Suryadarma (2011) confirmed the previous findings that there is little evidence to support the expansion of vocational education. Another study, by World Bank (2010b), showed that, despite the differences in the skills provided by the two schooling streams, the vocational education (SMK) stream is geared towards imparting the professional skills necessary for the labour market, while the general high school (SMA) stream should provide a more general education which serves as a base for further education. As such, one might expect that, if the demand for specific skills is high, SMK graduates will be better suited to the labour market in their initial years. However, the unemployment rate of recent SMA and SMK graduates aged 20-24 years is very high (30 per cent), with SMK graduates faring only slightly better. In the overall population, SMK graduates used to have significantly lower unemployment rates, but these rates have converged with the level of SMA graduates.

Table 4.2 below provides the results of studies where labour productivity was shown to be closely related to human resources. The results showed that the average number of years of schooling in developing countries has increased from 2 per cent in 1950 to 11 per cent in 2010. Other results showed that education and work experience have a positive effect on earnings. Thus, the additional year of schooling will potentially determine the level of earnings. Furthermore, the effect of education on incomes tends to be higher for women; therefore, education is an effective tool for reducing the gender earnings gap. When the rates of return to education were compared across countries, it was revealed that developing countries received higher rates of returns than the developed countries.

Table 4. 2: List of Literature Reviewed

No	Author/Date	Descriptive/Aims	Methods/Procedures	Findings	Countries	Rate of Returns (Per cent)
Human Capital						
1	Schultz (1960, 1961)	Proposed to treat education as investment in men and its consequences as a form of capital.	Annual Earnings Foregone in Attending School compared to total weeks worked and income per week.	Worker's productivity is related to the human capital.	US	Theoretical Analysis
2	Becker (1962, 1964)	Estimated the rate of return to High School and College education in the US.	The average earnings of high schools and college education and compared to the sum of direct and indirect cost of attending further education	Education and experience have a positive effect on worker's earnings.	US	College Graduate 1939-56: 14.5 – 12.4 1958 : 14.8 1959: slightly higher than 1958 High School: 1939-1958:16 - 28
3	Mincer (1970, 1974)	Explored how human capital affects earnings of individuals in the US	Mincerian Earnings Function	The amount of time spent in education is a main determinant of increased earnings.	US	College: 1939: 11 1949:10.6 1958:11.5 High School: 1939:12.5 1949:11.8 1958:15.1
4	Pradhan (1998)	Estimated the factors of school enrolment and delayed school enrolment	OLS	Father's education has a stronger effect than mother's education for both boys and girls.	Indonesia	One additional year of education increases the boy's probability of enrolment by more than 2 per cent points.
5	Levine and Kevane (2003)	Investigated the effect of being daughter in the family	OLS and Probit regression	There was no evidence for different treatment between males and females.	Indonesia	No rate of returns to education was mentioned
6	Checchi (2005)	Provided an extensive survey of the literature on human capital and social formation	Comparative analysis and modelling	Female participation in education is more strongly conditioned by family income.	World	Theoretical Analysis

Table 4.2: Continued

No.	Author/Date	Descriptive/Aims	Methods/Procedures	Findings	Countries	Rate of Returns (Per cent)
7	Borjas (2008)	Presented tool for analysing the rate of return to education	Descriptive statistics	Education should bear the direct and indirect costs.	US	Theoretical analysis
8	Chen (2009)	Examined the different outcomes of vocational and general schools in terms of job opportunity and earnings.	OLS/Heckman's 2-step procedure/IV	Vocational education shows positive and significant coefficient in employment opportunities and earnings premium.	Indonesia	Attendance at senior vocational school increases the probability of achieving employment by 7 percent.
Returns to Education						
9	Psacharopoulos (1973, 1981, 1994, 2004)	Compared rates of return to education between 14 developed countries and 22 developing countries	Literature survey	The rate of return of college degree much higher than other levels of education.	World	Primary School: 25.5 Per cent, secondary school: 15.6 percent
10	Byron and Takahashi (1989)	Examined the return to education in Indonesia in private and public sector	OLS	Higher returns to education in the private sector are observed Education and experience variables explained 66% of the variation in earnings. The private sector is found to reward education more generously than the public sector.	Indonesia	15-17 per cent in every additional year of schooling
11	Behrman and Deolalikar (1991,1993,1995)	Aimed to provide rate of return to education and gender earnings differentials in Indonesia	OLS Mincerian earnings function method compared to fixed and random effects.	The marginal increases of wage rates and earnings with post-primary schooling are greater in percentage terms for Females than for males in Indonesia	Indonesia	The rates of return to different levels of schooling ranged from 5 per cent to 11.7 per cent.

Table 4.2: Continued

No.	Author/Date	Descriptive/Aims	Methods/Procedures	Findings	Countries	Rate of Returns (Per cent)
12	Deolalikar (1993)	Estimated gender earnings differences in the returns to schooling.	Log of hourly wage affected by level of education. The data applied in this study were Indonesian Socio-Economic Survey data in 1981.	Males have significantly lower returns to schooling than females at the secondary and tertiary levels.	Indonesia	The return to university education is 25 per cent higher for females than males and for Diploma is 53.5 per cent higher for females
13	Ashraf (1994)	Calculated the returns to three different levels of education between white and black workers	Heckman's correction model	The returns for black college graduates were found to be higher than those for white college graduates, while in the case of high school graduates the returns were much closer to each other	US	The male female earnings differential in the black sample dropped from 32,3 per cent in 1967 to 12.7 per cent in 1986. There appeared Be no such trend in the white sample
14	Duraisamy (2002)	Estimated changes in return to education during 1983-1994 in India	OLS and joint maximum likelihood (JML)	The coefficients of the educational level dummy variables are positive and also statistically significant. Higher levels of education, especially for women, increase the probability of entering into wage work.	India	The rate of return to education per year were 7.9, 17.3 and 11.7 per cent for primary, secondary and college level respectively
15	Harmon et al. (2003)	Estimated the rates of return to education in the UK, compared the return to other types of investment in OECD countries	OLS and Heckman technique	An additional year of schooling has increased returns between 7-9 per cent.	UK	Male : 4 Female : 7
16	Fersterer and Ebmer (2003)	Estimated the income inequality within skills groups and across skills groups	OLS applied to standard Mincerian earnings functions.	There are two forms of income in-equality: wage inequality within skills groups and inequality across skills groups	Austria	Men: 1981-1997:9.4 - 6.6 Women: 1981-1997:11.3 - 6.6

Table 4.2: Continued

No.	Author/Date	Descriptive/Aims	Methods/Procedures	Findings	Countries	Rate of Returns (Per cent)
17	Dougherty (2005)	Education has increased women's skills and provided an extra return in the US	Adopted Mincerian earnings function and Maximum Likelihood Estimation and Blinder-Oaxaca method	The return to schooling tends to be higher for females than males and education has reduced gender gap	US	The regression yields years of schooling coefficients of 0.0490 for males and 0.0686 for females, male-female differential in the schooling coefficients was 0.0196
18	Granado et. al. (2007)	Investigated the investment in Indonesia's primary and secondary education	Descriptive analysis and OLS	The enrolment rate in Indonesia increased from 72 per cent in 1970 to 91 per cent in 2005.	Indonesia	The return for primary, junior and senior secondary was 4.25 and 28 per cent respectively.
19	Barro-Lee (2013)	Provided the distribution of educational attainment by separate regions over 146 countries	Descriptive statistics and instrumental variable (IV)	The average years of schooling for 122 developing per cent in 2010.	World	the estimated rate-of-return to an additional year of schooling ranges from 5 per cent to 12 per cent.
Gender Discrimination and Earnings Differential						
20	Ferydhanustya-wan et.al (2001)	Estimated wage equation for female and male workers	Blinder-Oaxaca method	Wage discrimination exists in Indonesian labour market.	Indonesia	1986 : Endowment effects : 54 per cent, Discrimination effects : 46 per cent. 1997: Endowment effects : 70 per cent, Discrimination effects : 30 per cent
21	Pirmana (2006)	Examined the earnings inequality across genders	Blinder-Oaxaca method	factor as human capital, socio-demography-economic characteristic, and location factors significantly affects individual earning in Indonesia	Indonesia	41 per cent of the earnings gap caused by endowment effect and 58 per cent attributed to discrimination effect.

4.6 Conclusion

Many studies on the return to human capital and gender earnings differentials have been conducted in both developed countries and developing countries, including Indonesia. Studies have attempted to determine whether education is a form of investment in human capital that can affect earnings. The study of human capital started in the 1950s and became popular after the 1960s when Schulz (1960) and Becker (1962) introduced the concept of human capital investment in the US. Table 4.2 summarises the literature review from the 1960s until recent work in 2010. About 29 studies related to education and earnings by 21 authors have been reviewed.

Early studies in this area were conducted in the United States; however, after the 1970s, studies on education and earnings have been conducted in other parts of the world, including Indonesia. A considerable part of the literature on returns to education has attempted to estimate the rate of returns to education from primary school education up to tertiary education. The studies have estimated the effect of education on different earnings levels. Furthermore, the studies have tried to compare the returns to education in both developed and the developing countries. Lastly, one of the aims of this strand of literature is to assess the gender earnings differentials within skills groups and across skills groups.

The most crucial research examining gender differences in returns to education in Indonesia was conducted by Behrman and Deolalikar (1991, 1993 and 1995), Deolalikar (1993), and Byron and Takahashi (1989). Their results presented estimates of gender earnings differences with regard to educational attainment.

CHAPTER 5
THE DATA

5.1 Introduction

This chapter will discuss the data used in this study in order to examine the gender earnings differential in the Indonesian labour market. In this analysis, we will utilize three National Labour Force Surveys (Sakernas) conducted by Statistics Indonesia. The data covered all ethnic groups and regions at all levels of education and are representative of the whole of Indonesia. This dataset also includes detailed information on residential location, family background, education, employment, earnings and other important demographic characteristics of both male and female. These survey data will enable us to examine changes in earnings and occupational inequality over time.

The chapter begins with a discussion of the concept of the data followed by the data collection methodology. The means of collecting the data and the sample size chosen are also discussed in this section. The next section will examine the sources of the data. This includes other data sources used in this study. The discussion of the data sample focuses on the amount of sample data included in this study including individuals' ages and paid employment. The next section explains the descriptive statistics and gives a general overview of the data. The final section will provide a summary of this chapter.

5.2 The Concept of the Data

The concept and definition of labour force used by Statistics Indonesia is the same as that suggested by the International Labour Organization (ILO) (Hussmanns et al. 1992). This

concept has been used since 1976. The ILO concept divides the population into two groups: the working age population and the non-working age population. The working age population is divided into two further groups based on their main activities. These two groups are the labour force and non-labour force. The working age population in Indonesia consists of people aged 15 years or more (BPS, 2011c). The population included in the labour force is the working age population who worked at least one hour during the week of the survey, or those who had jobs but were temporarily away from work, such as employees on vacation. The non-labour force population comprises the working age population still in school, performing household activities or engaged in other activities apart from personal activities (BPS, 2011c).

Statistics Indonesia (BPS) uses surveys to collect labour force data. First, the data are collected through censuses and surveys such as Population Census (*Sensus Penduduk, SP*) every ten years and Inter Census Population Survey (*Survei Antar Penduduk, SUPAS*). The SUPAS are carried out in the mid-period between two population censuses (e.g., 1976, 1985, and 1995). In these surveys, selected households are interviewed in order for the state to obtain demographic information, such as fertility, mortality and migration. In addition, the National Social Economic Survey (*Survei Sosial Ekonomi, SUSENAS*) and National Labour Force Survey (SAKERNAS) take place every year. Most of the Indonesian labour force data are used officially in Indonesia and internationally by organizations such as the World Bank and the ILO.

Among these various surveys, the National Labour Force Survey is designed to reveal the general situation of the labour force in Indonesia and to determine whether or not there has been a change in labour structure between the enumeration periods. SAKERNAS was first conducted in 1976 with the aim of collecting specific employment data. The survey was

originally designed to correct weaknesses of manpower data in the 1971 census. SAKERNAS uses the "labour-force approach," purely by using two reference times: current and usual. The labour force approach was used for the first time in 1971, prior to carrying out the survey with comprehensive testing by BPS in collaboration with ILO and the Labour Department. The same survey was then conducted in 1977 and 1978, and was designed to obtain data series that can be associated with the data from the Census and intercensal survey. SAKERNAS was temporarily halted for several years but then continued every year until 1985.

Starting again in 1986, the survey was conducted quarterly to capture seasonal fluctuations in employment. As the Indonesian economy is still strongly dominated by the agriculture sector, employment conditions are believed to be influenced by the agricultural seasons. Sectoral employment and other relevant characteristics will show the top and bottom of the fluctuations according to the agricultural season. In order to capture such fluctuations, the enumeration was carried out in February, May, August and November. This quarterly survey was conducted for eight years until 1993. The results show that seasonal fluctuations cannot be clearly demonstrated by the quarterly data. This may be due to the small size of the sample. Surveying approximately 20,000 households will only produce national estimates. With different seasons between regions, evenly distributed nationally averaged samples are likely to yield the same results for the fourth quarter. Unless the number of samples is increased to produce regional data, the quarterly survey will be of little use for indicating seasonal fluctuations.

The quarterly survey was suspended in 1994 and replaced by an annual survey including more detailed questions. The sample size was 65,500 households. In 1998 the number of samples was reduced to 49,200 households due to lack of funding. Until 1999,

SAKERNAS had been conducted in August each year. The August employment figures from SAKERNAS were compared with data from the survey, which was held in February. In 1999, the SAKERNAS sample was further reduced to approximately 20,000 households with the intention of only producing detailed information on national and provincial data which are more aggregated.

The detailed data on employment are collected in SAKERNAS. The working age population (originally those aged 10 years or more but subsequently changed to 15 years in 1998)[13] is divided into two segments: the labour force and the non-labour force. The labour force consists of those who are working or seeking jobs (unemployed). Those who were working were asked about working hours, job opportunities, types of job, job status, additional jobs, and wages and salaries received. They were also asked whether or not they were looking for another job. The unemployed were asked about how they were trying to find a job, how long they had been looking for a job, and whether they were looking for a part-time or a full-time job. In addition, the survey collected socio-demographic data including age, gender and education.

From 1996 to 2004, the survey was normally conducted in August every year. Prior to that, SAKERNAS had been conducted quarterly, except for 1976 (September-December) and 1994 (July). From 2005 to 2010, SAKERNAS was conducted biannually, in February and August.

[13] The majority of countries use 14 or 15 years as the minimum age limit (Hussmanns et al. 1992).

5.3 Data Collection Methodology

SAKERNAS is conducted throughout Indonesia, covering all provinces and urban and rural areas. However, it does not include the Diplomatic Corps, households in specific enumeration areas such as military complexes, and specific households such as dormitories and prisons.

The data collected from the chosen households cover general information including name, relationship with head of the household, sex and age. Household members aged over 10 years are mainly asked about their marital status, education, occupation and income. All industries and occupations are covered by the survey as a sample product. The classifications of industry and occupation are in accordance with International Standard Industrial Classification (ISIC) and International Standard Classification of Occupation (ISCO).

The data collection from the selected households is conducted via face-to-face interviews between the enumerators and the respondents. Normally, all household members aged over 10 years are interviewed. If, for any reason, an interview cannot proceed during the initial visit, the enumerators are expected to return to the household and try again until successful. The data are collected on a specific date during the month of the survey. The field interviews for all sampled households are conducted during a three-week period.

The labour force survey covers all industries including the agriculture sector, mining, manufacturing, electricity construction, trading, transportation, finance and public services. All occupations are also covered by the survey as a sample product. Furthermore, the survey covers all 32 provinces and seven regions of Indonesia. The survey produces data in regard to industry, occupation, employment status, age, sex, hours of work, level of education, and region.

5.4 Sources of Data

The data for this study are obtained from a number of sources. The primary source is the National Labour Force Survey (1989, 1999 and 2009) conducted by Statistics Indonesia. This dataset provides information on economic and demographic factors which will enable analysis of the determinants of male-female discrimination and earnings differential in Indonesia.

The 1989 National Labour Force Survey was conducted quarterly during February, May, August and November, and the sample size was 65,490. It provides information about the size of the labour force by its level of education, participation rate in the labour market, the volume of employment by sector, and level of income. However, the survey does not provide information on marital status and school attendance.

The 1999 National Labour Force Survey was conducted biannually during February and August, and the sample size was 47,580 households. The households covered in the survey were located in 27 provinces. In addition, the 1999 Sakernas survey provides information on marital status and school attendance rate. The 2009 National Labour Force Survey was conducted during February and August. Sample data selected for Sakernas in August 2009 amounted to about 293,088 households, with a return rate of 98.64 per cent.

The fundamental aim of this research is to find out the rate of returns to education and its changes and trends. The most recent data available were collected in 2009; thus, in order to observe further details and changes in the Indonesian labour market over the last two decades, the researcher has extended the labour force survey data to include the 1989 and 1999 surveys' datasets.

5.5 The Data Sample

The sample data included in this study comprise individuals aged between 15 and 65 who received wages as paid employees. The total samples used in the three surveys chosen for this study can be summarized as follows:

Table 5. 1: Total Sample of Sakernas Data

Sakernas	Male	Female	Total
1989	22,779	9,649	32,428
1999	18,414	8,599	27,013
2009	80,411	42,517	122,928

Source : BPS (1989, 1999, 2009)

Table 5.1 shows the total number of observations used in this study. The data are divided between males and females. Overall, more male respondents than females received wages. For 1989, the second-quarter survey is used in this study, comprising 65,490 households and up to 224,148 individuals aged ten years or more. However, this study focuses only on the 32,428 individuals who received wages as paid workers.

For the 1999 national labour force survey, we used the August survey containing 155,572 individuals. Out of the total of 27,013 individuals who received wages as paid employees, 18,414 were males and 8,599 were females. The male sample is thus double the size of the female sample. In 2009, the study focuses on the 122,928 individuals who received wages as paid employees, of whom about 34.5 per cent are females.

Table 5.2 describes the sample data from a residential perspective. The data show the total number and percentages of respondents in all areas in terms of males and females during the period 1989-2009. The data show that the urban sample is larger than the rural one. However, for both rural and urban areas, the sample contains more male than female workers.

Table 5. 2: Number and Percentage of Sample Data by Gender and Residential Location.

Location	1989	percent	1999	percent	2009	percent
Rural	12,925	39.86	11,184	41.40	49,880	40.58
Male	8,869	27.35	7,804	28.89	34,273	27.88
Female	4,056	12.51	3,380	12.51	15,607	12.70
Urban	19,503	60.14	15,829	58.60	73,048	59.42
Male	13,910	42.90	10,610	39.28	46,138	37.53
Female	5,593	17.25	5,219	19.32	26,910	21.89
Total	32,428	100	27,013	100	122,928	100.00

Source : BPS (1999, 2009)

It is important to note that those employees who receive salaries mostly live and work in urban areas as formal workers. Meanwhile, rural areas are dominated by informal workers, who sometimes do not receive wages during the planting season. Furthermore, the majority of the paid workers are men, while women mostly serve as housewives or are considered unpaid workers, for example helping their families in the paddy fields.

5.6 Data Sample Description

5.6.1 Labour Force Location: Urban-Rural

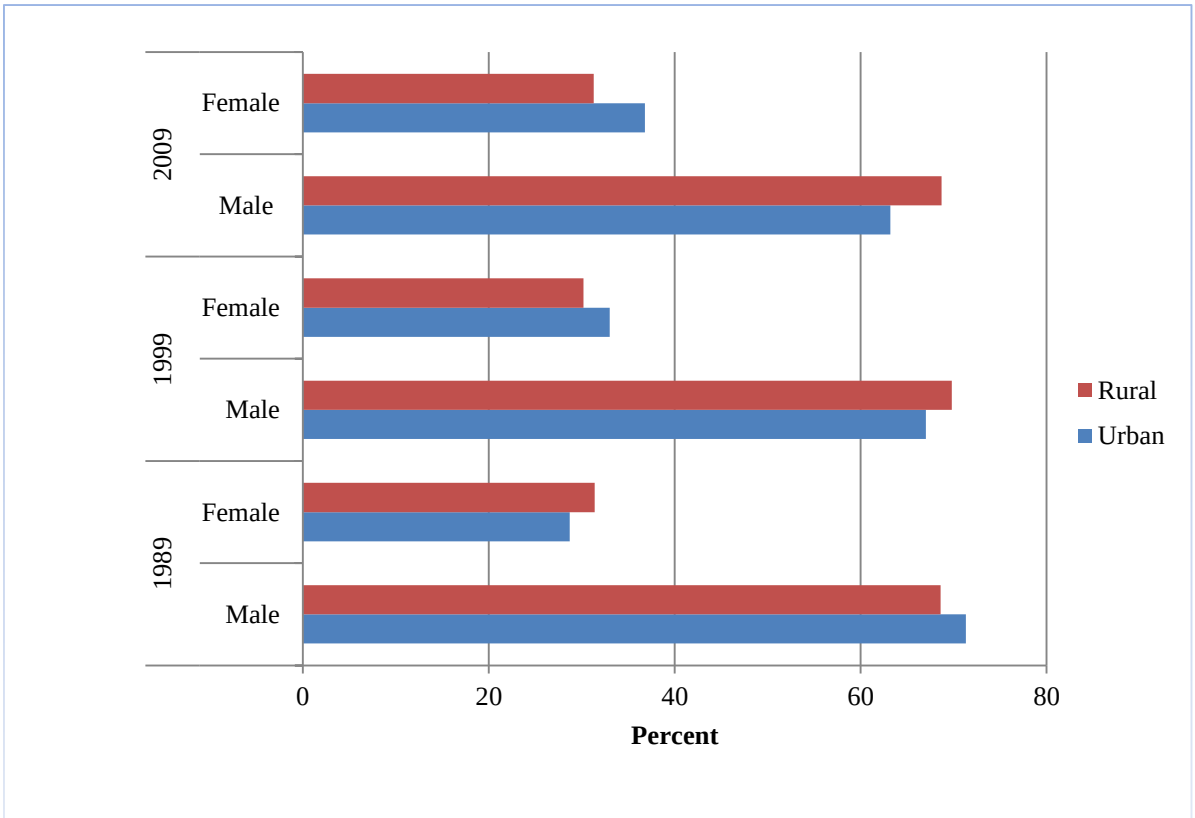
The following graph and table show that the male labour force is larger than the female labour force in both urban and rural areas. These data indicate that male workers account for more than 60 per cent of the total labour force in both urban and rural areas. Indonesia is an agricultural country where most women do unpaid work such as helping the family on the farm or working at home as housewives.

Table 5. 3: Urban – Rural

Residential Location	1989		1999		2009	
	Male	Female	Male	Female	Male	Female
Urban	71.3	28.7	67	33	63.2	36.8
Rural	68.6	31.4	69.8	30.2	68.7	31.3

Source: BPS (1989, 1999, 2009)

Figure 5. 1: Urban – Rural



Source: BPS (1989, 1999, 2009)

5.6.2 Labour Population Age

As mentioned earlier, the sample data collected in the national labour force survey include individuals aged 15 years or more; the maximum age selected for these surveys is 65 years and the average ages of males and females are 35 and 32 years respectively.

Table 5. 4: Average Age

Age	1989		1999		2009	
	Male	Female	Male	Female	Male	Female
Min	15	15	15	15	15	15
Max	65	65	65	65	65	65
Mean	35.10	31.23	34.96	32.37	35.82	33.38
Std deviation	11.125	11.467	10.976	11.154	10.989	10.828

Source: BPS (1989, 1999, 2009)

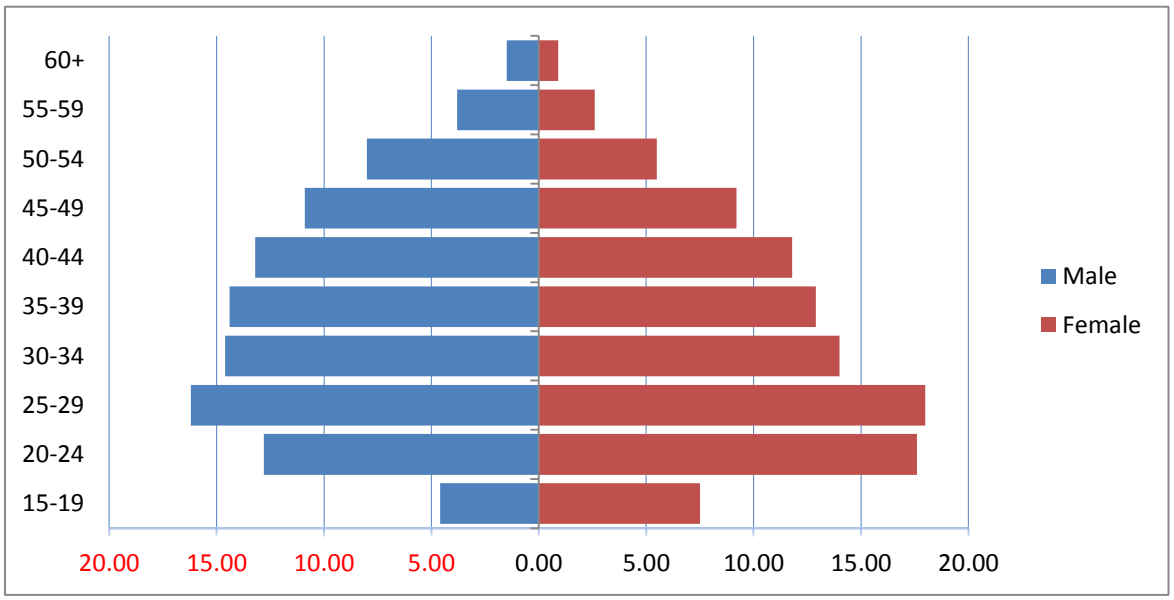
As is apparent from Graph 5.2, the majority of males and females in the labour force are aged between 25 and 29. The results of this survey are virtually the same as those of Statistics Indonesia and the United Nations Population Fund (UNFPA), which showed that the largest group among the Indonesian male and female population was the 25-29 age range. The second largest group differed in each study period. The 1989 survey shows that the majority of working male workers is in the 30-35 age groups, while the majority of females are in the 20-24 age group. This trend continues through to 2009. Table 5.5 shows that as people become older their contribution to the work force starts to decline. This phenomenon is mainly caused by health conditions, poor nutrition and lack of medical care (Alisjahbana and Manning, 2006). Therefore, the majority of Indonesians tend to stop working once they reach 65 years of age. The age structure of the Indonesian population is moving slowly from the young age range to the intermediate one.

Table 5. 5: Labour Age Category

Age	1989		1999		2009	
	Male	Female	Male	Female	Male	Female
15-19	6.3	14.1	6.5	10.8	4.6	7.5
20-24	12.3	20	12.8	18.1	12.8	17.6
25-29	16.4	18.9	15.9	17.5	16.2	18
30-34	16.9	13.2	15.8	14.4	14.6	14
35-39	14.5	10.1	15.3	13.7	14.4	12.9
40-44	10.8	7.8	13	9.2	13.2	11.8
45-49	10.2	6.9	9.5	7.1	10.9	9.2
50-54	7.3	4.9	6.1	5	8	5.5
55-59	3.3	2.5	3.3	2.6	3.8	2.6
60+	1.9	1.7	1.8	1.6	1.5	0.9

Source: BPS (1989, 1999, 2009)

Figure 5. 2: Labour Age Category



Source: BPS (2009)

5.6.3 Marital Status

Table 5.6 and Figure 5.3 show the marital status of males and females. Unfortunately, the 1989 survey does not include data on marital status. In the 1999 labour force survey, the data show that married male and female employees comprise 55.5 per cent of the total sample data. In 2009, the number of married male and female employees to total population had increased to 57.3 per cent and 58.7 per cent, respectively. There were more single males, at 41.8 per cent, than single females, at 33.3 per cent, in 1999, a trend that had increased slightly by 2009.

Table 5. 6: Marital Status

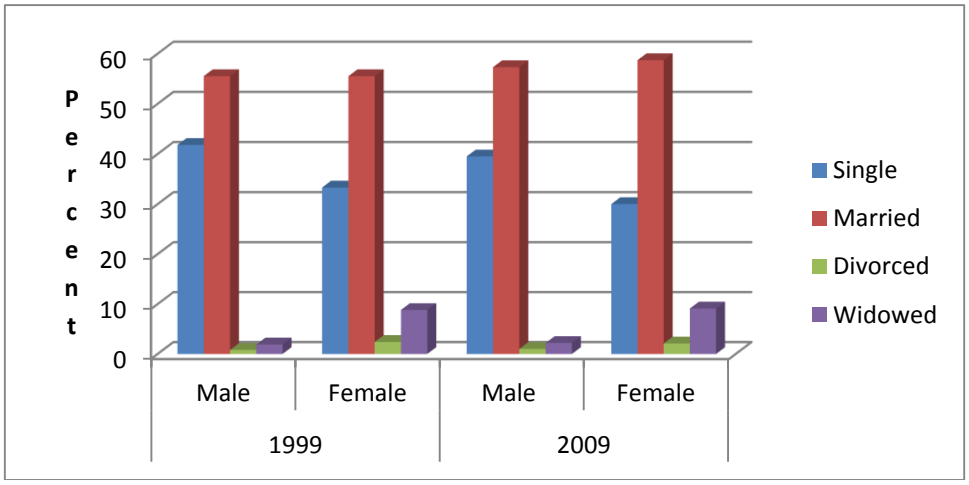
	1999		2009	
Marital Status	Male	Female	Male	Female
Single	41.8	33.3	39.5	30
Married	55.5	55.5	57.3	58.7
Divorced	0.8	2.4	1	2.1
Widowed	1.9	8.8	2.2	9.1

Source: BPS (1999, 2009)

Furthermore, in 1999, the percentages of male workers with divorced and widowed status were 0.8 per cent and 1.9 per cent respectively; these figures were lower than those for divorced and widowed female workers, at 2.4 per cent and 8.8 per cent respectively. In 2009, the numbers of divorced and widowed males and females had slightly increased. According to Mark (2010), quoting the Supreme Court through the Directorate General of Religious Judiciary, divorce rates in Southeast Asia, including Indonesia, are considered the highest in the world. For example, during the period 1950-1960, 50 out of every 100 marriages ended in divorce. However, from the 1970s to the 1990s, the divorce rate in Indonesia and other countries in Southeast Asia dropped dramatically, whereas in other parts of the world the divorce rate has been increasing. The divorce rate in Indonesia has increased significantly

during the last five years due to adultery, underage marriages and household violence (Tim et al., 2001).

Figure 5. 3: Marital Status



Source: BPS 1999, 2009)

Law No. 1 of 1974 concerning marriage set the minimum ages for marriage at 19 years for male employees and 16 years for women. Table 5.7 shows the average age of those marrying between 1992 and 2005. The data show that female employees in rural areas married earlier, at an average age of 21 years, as compared to urban female employees, who married at the age of 24 years. Similarly, urban males married earlier, at an average age of 27 years, compared with rural male employees, who married at the age of 25. The average age at which female employees married is 22 while for male workers it is 26.

Table 5. 7: Average Age of Marriage by Area and Sex, Indonesia, 1992-2005

	Urban		Rural		Total	
Year	Female	Male	Female	Male	Female	Male
1992	24	27.2	20.9	24.9	22	25.8
1993	23.9	27.4	20.8	24.8	22.3	26
1994	24.5	27.7	21.7	25.2	22.7	26.1
1995	24.1	27.4	21	24.9	22.3	25.9
1996	24.4	27.6	21.1	24.9	22.5	26
1997	24.6	27.7	21.2	25.1	22.6	26.2
1998	24.7	27.9	21.2	25.1	22.7	26.3
1999	24.8	28.1	21.5	25.6	23	26.7
2000	24.6	28	21.5	25.5	22.9	26.7
2001	24	27.4	21	25.2	22.4	26.2
2002	24.4	27.6	21.4	25.4	22.9	26.5
2003	24.5	27.8	21.7	25.7	23	26.7
2004	24.3	27.6	21.6	25.7	22.9	26.6
2005	24.6	27.9	21.9	26.1	23.2	26.9

Source : BPS (2008)

5.6.4 School Participation

Table 5.8 shows school attendance during the survey. These data are important if we are to determine how many school-age children are able to take advantage of educational facilities. The sample data indicate who are attending school at a certain age. In 1989, the data do not show school attendance. In general, there were more males no longer in school than females during the period 1999-2009. At the same time, there were 1.6 per cent more uneducated females than males in 1999, a figure rising to 3.8 per cent in 2009.

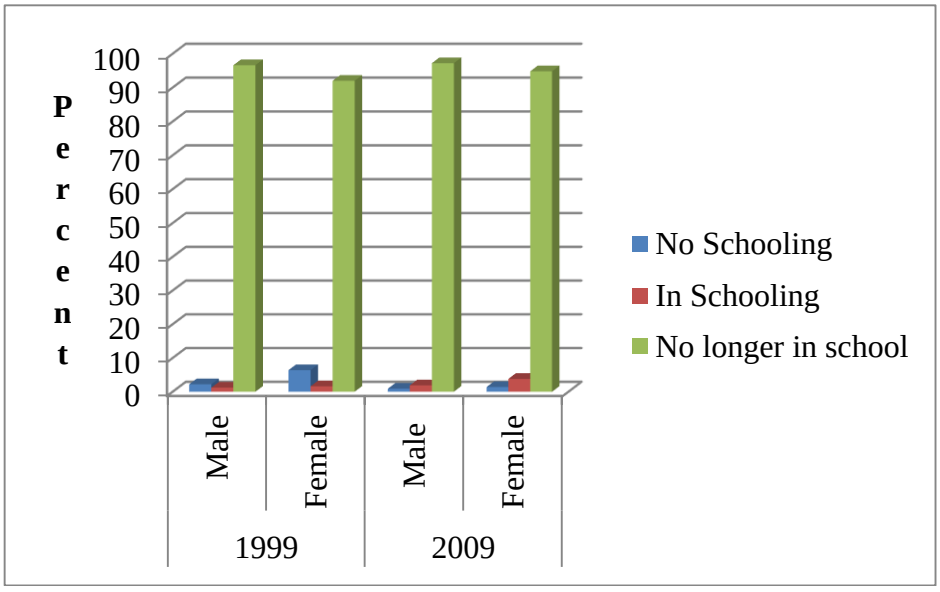
Table 5. 8: School Participation

School Participation	1999		2009	
	Male	Female	Male	Female
No Schooling	2.2	6.4	0.9	1.4
In Schooling	1.2	1.6	1.9	3.8
No longer in school	96.6	92	97.2	94.8

Source: BPS (1999, 2009).

In 1999, the percentage of females attending school was higher than that of males. 2.2 per cent of males had no schooling, whereas 6.4 per cent of females had no schooling. Further, 1.2 per cent of males attended school compared with 1.6 per cent of females. In terms of those no longer in school, the figure for males is 96.6 per cent, higher than that for females at 90 per cent. In 2009, the sample shows that the percentages of those no longer in school increased to 97.2 per cent for male employees and 94.8 per cent for female employees. Note that this study only includes sample data of those with monthly incomes. Since these data only cover individuals who are in employment, it makes sense that many of the sample population do not continue with further education when they start working; therefore, there are significant percentages of those no longer in school in these data. Certain factors have affected school attendance by both males and females. First, despite the parental mindset that education -

Figure 5. 4: School Participation



Source: BPS (1999, 2009)

is important for obtaining a better job and a higher salary, many parents in the rural areas still consider education to be unimportant. Second, parents tend to believe that males should attain a higher level of education than females. Finally, in terms of economic status, many parents were unable to support their children in further education, especially higher education. In 2001, 2004 and 2007, Statistics Indonesia shows that the literacy rate for women under 15 years old and over is lower than male employees.

5.6.5 Educational Attainment

This section presents the level of education attained by individuals from primary school up to college level. Table 5.9 shows a shift in the level of educational attainment from 1989 to 2009. Over the past two decades, the number of workers not attending or not completing primary school has gradually fallen, while the number completing every level of education is increasing. Although not yet 100 per cent successful, the nine-year compulsory education program launched by the government in 1989 has started to take effect. The sample also shows that the level of university achievement has increased from year to year.

In 1989, primary school is the most populated category for males and females at 28.6 per cent and 23.9 per cent, respectively. There were around 5 per cent more males with primary school qualifications. In terms of those not completing primary school, the figure for males was 13.8 per cent and for females 17.4 per cent. A possible explanation is that the country was unable to provide free elementary education because resources were inadequate, population growth was high and large numbers of children usually dropped out of primary school after completing the third year (Cann, 1982). In this case, the percentage of females not completing primary school was higher at 3.6 per cent. Compared to a decade earlier, in 1999 and 2009 there was a decline in the number of people receiving no schooling, those

who did not finish elementary school and those who started working with only primary school certificates.

Table 5. 9: Educational Attainment

Educational Attainment	1989		1999		2009	
	Male	Female	Male	Female	Male	Female
No Schooling	4.5	12	2.2	7	0.9	1.4
Not completed Primary School	13.8	17.4	8.7	6.4	8	7.1
Primary School	28.6	23.9	26.4	23.8	16.5	13.6
General Junior High School	12.8	7.1	15.1	10	16	11.9
Vocational Junior High School	2.6	1.0	2.1	1	1.5	0.8
General Senior High School	15.5	11.6	21.5	15.8	24.5	20
Vocational Senior High School	14.2	19.6	13.1	15.9	14.2	12.2
Diploma I/II	1.2	1.9	1.8	4.2	2.8	8.6
Diploma III	2.9	3	2.7	4.1	2.8	6.5
Diploma IV/BA	3.8	2.4	6.3	7	12.8	18

Source: BPS (1989, 1999, 2009)

In 2009, male general junior high school attendance stood at 16.5 per cent, slightly higher than female general junior high school attendance at 11.9 per cent, which is higher than the previous period. Next, as a part of the sub-system of the national education system, technical schools and vocational schools have played an important role in creating human resources in Indonesia. However, at lower secondary level, vocational schools have been less popular; therefore, the educational attainment at this level was low in each study period. At the upper secondary level, vocational schools (*Sekolah Menengah Kejuruan, SMK*) accounted for around 14 per cent of male education attainment during the period 1989-2009. Female vocational senior high school attendance started at 19 per cent in 1989 but dropped to 12.2 per cent in 2009. Meanwhile, general senior high school (*Sekolah Menengah Atas, SMA*) represented the highest educational attainment in 2009, at 24.5 per cent for males and 20 per cent for females. Educational attainment at the university level increased gradually from 1989 to 2009. The data show that the number of males with undergraduate qualifications

increased from 3.8 per cent in 1989 to 12.8 per cent in 2009, while the number of females with undergraduate qualifications increased sharply from 2.4 per cent in 1989 to 18 per cent in 2009. The data show that there were changes at the tertiary educational level between male and female employees in the Indonesian labour market. Before 1999, workers with Bachelor's qualifications were largely male; however, in 2009, college graduate workers were predominately female.

5.6.6 Main Activity

Table 5.10 shows that most of the labour force were in the 'working' category; i.e. they were able to engage in economic activities with intent to earn income or profit for at least one hour during the week in which the survey was undertaken. Activity also includes unpaid workers assisting in a business/economic activity. There were around 4 per cent more male employees than female employees. This was due to female employees' dual responsibility as employees and housewives. The data in the following Table 5.10 show that there were more female employees in the housekeeping category, at 3.4 per cent, than male workers at zero per cent. This implies that the main responsibility for raising children and carrying out household activities lay with female employees.

During the labour force surveys in August 1999 and 2009, there were three types of labour force activities. The main activity for males and females was work, at approximately 98 per cent; the second main activity was housekeeping, with very high percentages for both males and females. As mentioned before, there are significantly more females undertaking housekeeping activities than male workers. The survey for 2009, for instance, shows that 68.9 per cent of female employees was also doing housekeeping compared to male employees, at only 18.3 per cent. Moreover, the data show that the percentage of female

employees carrying out housekeeping activities has increased gradually from 59.8 per cent in 1999 to 68.9 per cent in 2009. The large number of female employees performing household activities cannot be separated from the Indonesian culture in which female employees are considered housewives and male workers are considered heads of households; i.e. male workers are responsible for providing a living for their family members. According to Cann (1982), many housewives also carry out income-earning activities, such as cooking for others, dressmaking, hairstyling, language instruction, music and dance lessons, and trading. However, these earnings activities may not be included in the labour force as determined by the survey because these female employees are classified as housewives even though they may be working part-time.

Table 5. 10: Main Activity

Main activity	1989		1999		2009	
	Male	Female	Male	Female	Male	Female
Working	99.2	95.9	98.8	98.4	98.3	98.2
Schooling	0.3	0.4	0.7	0.9	1.1	1.9
Housekeeping	0.0	3.4	9.9	59.8	18.3	68.9

Source: BPS (1989, 1999, 2009)

Schooling activity was the least common activity of the labour force during the survey. Schooling activity involves a person attending formal school, ranging from basic education to higher education during the survey period, excluding those on school holidays. There has been a slight increase in schooling activity during the period 1999-2009. Male schooling was at 0.7 per cent in 1999, rising to 1.1 per cent in 2009, while females' schooling rate increased slightly from 0.9 per cent in 1999 to 1.9 per cent in 2009.

5.6.7 Main Industry

Main industry is the field of activity or workplace in which the individual is employed. BPS followed the Industry Classification in Statistics Indonesia (ICSI). Population distribution according to type of industry indicates the most employment-driven sector. Industry classification in Statistics Indonesia is grouped into nine categories: agriculture, mining, manufacturing, electricity, construction, trading, transportation, financial, and community services. This also indicates the gender share to the total labour force. Generally, community, social and personal services dominate the main sectors of job categories. These categories include the public service sector, which is still a preferred sector for jobs in the Indonesian labour market, despite the fact that wages in the public sector are lower than those in the private sector. The main reason for the high demand and preference for the public sector is the job security that this sector provides.

Table 5.11 shows that a majority of all employees rely on the public sector, especially female employees. In 1989, the percentage of female employees working in the public sector had reached 49.7 per cent, but this proportion continued to decline until 1999 to 43.7 per cent, rising again to 56.2 in 2009. The sector that absorbs the next largest part of the labour force is manufacturing, at 14.6 per cent and 20 per cent during the period 1989-2009, with an increasing trend, except in 2009. In 1999, a significant part of the labour force was in the agricultural sector, with 15.2 per cent of male workers compared to 13.4 per cent in 1989, a figure that remained the same until 2009. Meanwhile, the female labour force in this sector fell slightly to 18.3 in 1999 and dropped sharply in 2009. During the economic crisis in mid-1997, the Indonesian government decided that agriculture should be the backbone of future growth because rural areas and agricultural producers in particular appeared to have suffered

less than their urban counterparts (Silvey and Elmhirst, 2003)[14]. In contrast to the agricultural sector, the proportion of male workers in the services sector declined slightly from 40.9 per cent to 35.4 per cent in 2009. Meanwhile, the manufacturing sector continued to increase from 18.5 per cent in 1999 to 22.2 per cent in 2009. At the same time, the agricultural sector provided employment for between 13.4 and 15.2 per cent of males and between 9.1 and 19.5 per cent of females.

Table 5. 11: Main Industry

Main Industry	1989		1999		2009	
	Male	Female	Male	Female	Male	Female
Agriculture, Hunting, Forestry and Fishing	13.4	19.5	15.2	18.3	15.1	9.1
Mining and Quarrying	1.9	0.3	2.0	0.4	3.7	0.4
Manufacturing	17.4	20.0	18.5	22.2	14.6	16.9
Electricity, Gas and Water	0.8	0.1	0.8	0.1	1.0	0.3
Construction	10.6	0.5	12.7	1.3	9.9	0.6
Wholesale, Retail Trade, Restaurant and Hotels	5.5	7.7	8.6	11.2	9.0	11.4
Transport, Storage and Communication	7.3	0.5	6.9	1.0	7.6	2.2
Financing, Insurance, Real Estate and Business Services	2.3	1.6	2.1	1.8	3.6	3.0
Community, Social and Personal Services	40.9	49.7	33.2	43.7	35.4	56.2

Source: BPS (1989, 1999, 2009)

The data also show that the lowest female participation rates are in mining, electricity and construction sectors. For example, females' participation in electricity in 1999 stood at only 0.1 per cent compared to 0.8 per cent for male workers. The electricity sector remained

[14] The 1997 financial crisis caused all sectors of the economy to experience substantial falls with the exception of agriculture and utilities. The construction and trade, and hotels and restaurants sectors suffered the largest collapse to minus 20.6 per cent (Firdausy, 2000).

constant at below 1 per cent. Conversely, female employees participated more in the retail trade, and restaurants and hotels, during the period 1989-2009. In these sectors, female employees' dominance over male workers continued to increase from 7.7 per cent in 1989 to 11.4 per cent in 2009.

5.6.8 Type of Occupation

Based on the classification issued by Statistics Indonesia, the types of occupation are divided into eight categories, namely professional, administrative, clerical, sales workers, service workers, agricultural workers, production workers, and others. Among the eight categories of job classification, production work was the most common type of occupation, in which 42.4 per cent of male workers and 22.5 per cent of female employees were employed in 1999. However, in 2009, the percentages of production workers decreased slightly to 39.3 per cent for males and 19.2 per cent for female employees. From the data, it is clear that both male and female unskilled workers dominate this type of occupation. In other sectors, male workers still predominate, such as the agricultural sector which accounted for 13.9 per cent of male workers and 8.8 per cent of female employees workers in 2009.

Table 5. 12: Type of Occupation

Type of Occupation	1999		2009	
	Male	Female	Male	Female
Professional, technical and related workers	10.4	19.2	14.6	32.1
Administrative and managerial workers	0.8	0.4	2.9	1.1
Clerical and related workers	16.6	15.4	13.0	17.4
Sales workers	6.8	8.9	5.8	8.1
Service workers	8.3	15.4	7.3	13.0
Agricultural workers	14.7	18.1	13.9	8.8
Production workers, operators and labourers	42.4	22.5	39.3	19.2
Others	0.0	0.0	3.2	0.2

Source: BPS (1999, 2009)

The professional, administrative and managerial workers' category was dominated by female workers. In 1999, this category accounted for only 10.4 per cent of male employees and 19.2 per cent of female employees, although it increased to 14.6 per cent of male employees and 32.1 per cent of female employees in 2009. Sales and service workers show the same trend as professional workers, with female employees dominating during the period 1999-2009. Female sales workers in this sector declined from 8.9 per cent in 1999 to 8.1 per cent in 2009. Similarly, female service workers also declined from 15.4 per cent in 1999 to 13 per cent in 2009. In conclusion, the data explained that male employees dominated in unskilled work, while female employees dominated in professional work.

5.6.9 Employment Status

Employment status refers to the conditions under which a person performs work or activity in a business unit. Since 1997, Statistics Indonesia has divided employment status into seven categories: self-employed; employed assisted by temporary workers; employed assisted by permanent workers; employee; casual employee in agriculture; casual employee not in agriculture; and unpaid worker. Until 1999, the Indonesian labour force survey placed employment status into five categories, excluding casual employee in agriculture and casual employee not in agriculture.

Workers with no fixed employers are classified not as workers/employees but as casual employees. Casual employees in agriculture are those who work with other people/institutions that are not fixed (more than one employer in the last month during the survey period) in agriculture businesses, such as household enterprises or non-business households, and who receive wages in the form of money or goods or both, with daily and

contract systems. Agriculture businesses include agricultural crops, plantations, fisheries and hunting.

Selected data from SAKERNAS 1989-2009 show that all employment statuses are under the employee category[15]. Many other employment statuses do not include income, therefore, these data cannot be used to estimate the returns to education. Only the employee categories with wages in each survey period can be used in this study.

5.6.10 Number of Working Days

According to Indonesian Labour Law No. 13/2003, an employer can stipulate five or six working days a week. The following tables show that the majority of workers are working six days a week. Since 1999, a significant number of workers have been working five days a week. In 2009, for instance, 19.3 per cent of male workers worked five days a week compared to 1989 when only 7 per cent of males worked five days a week. The data also show that male employees work more days than female employees.

Table 5. 13: Number of Working Days

Day	1989		1999		2009	
	Male	Female	Male	Female	Male	Female
1	0.1	0.4	0.2	0.3	0.3	0.3
2	0.5	1	0.5	1.2	0.9	0.9
3	1	2.1	1.2	2.0	2.1	2.0
4	2.2	3.4	3.1	4.0	3.8	3.2
5	7	7.3	12.6	10.4	19.3	16.6
6	58.8	51.3	54.5	53.4	48.1	53.2
7	30.4	34.6	27.9	28.6	25.6	23.8

Source: BPS (1989, 1999, 2009)

[15] Comola and Mello (2010) also mentioned that Indonesia is a country where non-salaried work is widespread, and the SAKERNAS data are available for salaried employees only.

5.6.11 Number of Working Hours

One important variable capable of describing work productivity is 'number of hours worked'. Since 1982, Statistics Indonesia together with the Ministry of Manpower and Transmigration (MoMT) agreed that the minimum number of normal working hours is 35 hours per week. Those who work for less than 35 hours per week are considered part-time workers. The maximum number of normal working hours per week is 40 hours. Any time in excess of this is considered overtime, thus entitling the workers/labourers to overtime pay.

Table 5.14 shows that the average working hours for female employees were less than for male employees during the period 1989-2009. Female employees, on average, work 42 hours per week. The average working hours of both male and female employees are still above the normal working hours (40 hours per week). This implies that the average number of working hours in Indonesia is higher than the provisions set by Law No. 13/2003, which set 40 hours as the maximum number of working hours per week. Table 5.13 above shows that most Indonesian workers during the period 1989-2009 worked six days a week. If the average number of working hours is more than 40 hours per week, as shown in the following Table 5.14, the average number of working hours is more than normal working hours. These data are confirmed by the ILO (2011) report, which shows that almost a third of regular employees are working more than 48 hours per week. According to this report, Java region, especially Jakarta, recorded up to 32 per cent excess hours (more than 48 hours per week) in 2009.

Table 5. 14: Average Working Hours

Working Hour/Week	1989		1999		2009	
	Male	Female	Male	Female	Male	Female
Mean	46	43.01	45.9	42.0	46.0	42.2

Source: BPS (1989, 1999, 2009)

Table 5.15 below shows that the number of Indonesian workers who work more than 48 hours per week has increased each year. In 1989, 40.8 per cent of male workers and 26 per cent of females worked more than 45 hours per week. In 1999, the number of workers who worked over 45 hours per week increased to 43.6 per cent of male workers and 30 per cent of female workers. In 2009, the data show that the number of workers who worked more than 45 hours per week dropped slightly to 39.5 per cent of male workers and 28.4 per cent of female workers.

Table 5. 15: Number of Working Hours

Working Hour/Week	1989		1999		2009	
	Male	Female	Male	Female	Male	Female
1-9	0.3	0.8	0.4	1.1	0.5	1.2
10-14	0.5	2	0.6	2.3	0.8	2
15-24	2.8	7.6	3.2	8.7	4.3	8.2
25-34	8.1	15.6	9.1	14.3	9.4	14.9
35-44	35.8	34.4	31.4	32.1	31.2	33.6
45-59	40.8	26	43.6	30.9	39.5	28.4
>60	11.8	13.5	11.8	10.5	14.3	11.8

Source: BPS (1989, 1999, 2009)

According to the Statistical Yearbook of Indonesia 2010, the number of individuals working within the 40 hours per week guideline did not change significantly from time to time. This BPS report is in line with the data in Table 5.15 showing that the number of people working 35-44 hours does not change significantly after 1999. According to the BPS report, most individuals who work within normal hours are located in the agricultural, trading and public services sectors. Individuals working more than 45 hours per week are mostly to be found in the manufacturing sector, including trading and public services.

In the August 2009 survey, the number of employees working less than nine hours a week is relatively small, accounting for only 0.5 per cent of males and 1.2 per cent of female

workers. Those working between 10 and 14 hours a week account for 0.8 per cent of male workers and 2 per cent of female workers while the number of individuals working between 15 and 24 hours per week increased significantly to 4.3 per cent of male workers and 8.2 per cent of female workers. People working between 25 and 34 hours per week account for 9.4 per cent of male workers and 14.9 per cent of female workers and, finally, percentages of people working for more than 35 hours per week reached 31.2 per cent for male workers and 33.6 per cent for female workers. From time to time, the number of individuals working over 35 hours per week does not change significantly. However, the number of people working over 45 hours per week decreased slightly during the period 1999-2009.

5.6.12 Amount of Working Experience

Working experience contributes to or affects workers' earnings significantly; sometimes, working experience is more important than postgraduate education. Working experience was not mentioned directly in the labour force surveys (1989, 1999 and 2009). However, they do indicate what proportion of the labour force has just started working or has just entered the labour market. The data show that more than 50 per cent of the Indonesian labour force have not changed their jobs, and many of them are still doing the same jobs that they were doing when the survey was conducted.

Table 5. 16: Working Experience

Experience	1989		1999		2009	
	Male	Female	Male	Female	Male	Female
Working experience	99.9	99.7	99.7	99.3	88.1	85.1
No working experience	0.1	0.3	0.3	0.7	11.9	14.9

Source: BPS (1989, 1999, 2009)

Table 5.16 shows that the majority of the Indonesian labour force has working experience. This working experience is calculated using a standard formula (experience = age – years of schooling – 6) where 6 is the number of years spent by the individual before enrolling in primary school in Indonesia. In 1989, nearly every worker had working experience. By 1999, a few young workers were entering the labour market with no working experience. In 2009, 14.9 per cent of female employees had no experience in the labour market, while 11.9 per cent of male workers had no experience. The proportion of male workers with working experience decreased from 99.3 per cent in 1999 to 88.1 per cent in 2009, while the proportion of females with working experience dropped from 99.3 per cent in 1999 to 85.1 per cent in 2009. One reason for this phenomenon was the fact that younger workers, especially female employees, aged between 18 and 24 were entering the labour market.

5.6.13 Average Monthly Earnings

Adequate earnings are important to ensure the welfare of workers; these can be measured in terms of real earnings. Table 5.17 shows eight different levels of wages ranging from 1 rupiah to 2,103,049 rupiah over the last two decades (1989-2009). Female employees' average wages are lower than male workers' average wages; as is common in most countries, women tend to receive lower wages than male employees for similar work (Cann, 1982). Over the last two decades, 93.5 per cent of male workers and 98 per cent of female workers received wages of between 1 rupiah and 210,306 rupiah. By 1999, these proportions had dropped drastically to 25 per cent of males and 49.6 per cent of females. In 2009, the percentages of those earning this range of salary fall to 2.5 per cent and 8.3 per cent for males and females respectively. The ILO (2011) reports that the monthly earnings of agriculture

workers are the lowest among all occupations and there is a huge gap between male and female workers.

Table 5. 17: Average Monthly Wages (Indonesian Rupiah)

Monthly Wages	1989		1999		2009	
	Male	Female	Male	Female	Male	Female
1 - 210,306	93.51	98.04	25	49.6	2.5	8.3
210,306 - 420,611	5.74	1.83	37.9	25.1	7.6	16.8
420,611 - 630,916	0.56	0.07	19.2	15.5	11.5	14.4
630,916 - 841,221	0.12	0.01	10.9	7.4	12.8	11.3
841,221 - 1,051,526	0.04	0.02	4.2	1.4	11.4	7.9
1,051,526 - 1,577,288	0.02	0.01	1.9	0.7	18.7	12.1
1,577,288 - 2,103,050	0.01	0.01	0.5	0.2	11.6	9.8
>2,103,050	0.01	0.00	0.5	0.2	23.8	19.3

Source: BPS (1989, 1999, 2009)

There was a shift in the wages range from 1 rupiah - 210,306 rupiah to 210,306 rupiah - 420,611 rupiah. In 1999, the majority of workers, both male and female, received earnings within the range of 210,306 rupiah to 420,611 rupiah. Salaries in the range of 420,306 rupiah to 630,916 rupiah were earned by 19.2 per cent of males and 15.5 per cent of females, while those in the range of 1,577,288-2,103,050 rupiah were earned by 0.5 per cent of males and 0.2 per cent of females. A smaller percentage of workers received more than 2,000,000 rupiah. In 2009, on the other hand, wages were increasing; 14.6 per cent of females received wages in the range 420,611 rupiah – 630,916 rupiah while 19.3 per cent earned over 2,103,050 rupiah.

Indonesia's average minimum wages vary from region to region. The minimum wages are set by provincial councils who estimate how much workers need to earn to provide for their basic needs. Since the decentralization law was imposed in January 2001, provincial and district authorities have had to abide by the law on minimum wages, which is set out by the central government. Provincial authorities determine provincial minimum wage levels

based on proposals by three groups (workers, employers and government). The provincial wage rates establish a minimum wage within the province. Local governments set minimum wages using the provincial levels as a reference. District governments also set minimum wages in some industrial sectors on an *ad hoc* basis; the district minimum wage must be larger than the provincial minimum wage. In 2009, for example, the minimum wage in East Kalimantan was 889,654 rupiah a month (MoMT, 2013).

Although the standard working hours are not strongly enforced, the normal working hours of 35-40 hours per week and 7-8 hours a day have been established by law throughout Indonesia. The earnings of female workers were lower than those of male workers in both 1999 and 2009. There are several possible reasons for this gap. First, male workers' average working hours are longer than those of women. Second, casual employees and female employees are at a disadvantage. Third, the low-pay rates for casual employees and female employees are higher percentage from all labour force. Finally, the minimum wage policy is inadequate to protect employees, especially casual employees, and the government faces non-compliance problems in enforcing minimum wage policies (Bird and Manning, 2008).

5.7 Conclusion

This chapter presents the concept of data and the source of data, including data description. This study applied three datasets; the data are taken from the 1989, 1999 and 2009 National Labour Force Survey (SAKERNAS) which is conducted by BPS. These micro cross-sectional datasets survey a representative sample of the Indonesian population. They provide a rich source of economic and demographic information about individuals within families which can be exploited to analyse the rate of returns to education and the determinants of the male-female earnings differential in Indonesia.

CHAPTER 6
RATES OF RETURN TO EDUCATION

6.1 Introduction

Earnings may differ across individuals as a result of different skills, abilities and other factors such as experience, marital status and residential location. Many researchers (Mincer, Becker, Behrman and Deolalikar) believe that human capital characteristics have a significant positive impact on males' and females' earnings. This study utilizes three SAKERNAS data conducted by Statistics Indonesia. Selected data from SAKERNAS 1989-2009 is used in the earnings equation. The data description from chapter 4 shows that all paid employment is under the employee category[16]. Only sample who received wages in each survey period can be used in this study.

This chapter focuses on several main topics. First, we examine how rates of return to education in Indonesia differ across genders and residential locations. Second, we investigate the importance of education variables in determining earnings differentials across genders. Finally, we attempt to estimate the trend in rates of return to education and their changes over the study period (1989-2009).

6.2 Research Methodology and Model Specification

This study aims to shed light the earnings gap between males-female who worked in the formal and informal sector in Indonesia. Rates of return from human capital are estimated

[16] Comola and Mello (2010) also mentioned that Indonesia is a country where non-salaried work is widespread, and the SAKERNAS data are available for salaried employees only.

for the country as a whole, as well as by gender, experience cohort, and children, marital status and residential location. The general form of human capital earnings equation that will be used in this study analysis can be written as:

$$LnW_{ij} = \beta_{ij} X_{ij} + \varepsilon_{ij}, \quad (6.1)$$

Where W = wage of workers

X = independent variables that influence wages

i = 1, 2, ...,n, which represents the number of independent variables

β = coefficients of the explanatory or independent variables

j = represents the samples to be used in the study (pooled, male or female sample)

ε = error term.

The model used in this study is the human capital model developed by Mincer (1974). The reason for this is that the foremost concern of the earnings inequality percentage variation of earnings, this can be achieved with a semi-log model. Further, this model is well accepted and widely used in the earnings estimation. Mincer points out that difference in human capital investment among workers are a fundamental contributor to earnings differentials. Mincer's approach of identifying sources of earnings differentials is used as the basis for the earnings decomposition analysis used in this study. Mincer schooling equation can be re-called from equation (4.1) as :

$$LnW_i = \beta_0 + \beta_1 S_i + \beta_2 X_i + \beta_3 X_i^2 + \varepsilon_i \quad (6.2)$$

The determination of X_i in equation (6.2) is not only based on human capital theory proposed by Mince (1974), but also based on various variables that determined by the data availability. Equation (6.2) will be modified to provide a better fit with some other relevant

variables, such as residential location, personal characteristics such as marital status and number of dependent children. The expanded human capital earnings equations are formulated and estimated using standard Ordinary Least Squares with separate regressions for males and females:

$$LnW = \beta_0 + \beta_1 NS + \beta_2 SUB-PRIM + \beta_3 JHS + \beta_4 VJHS + \beta_5 SHS + \beta_6 VSHS + \beta_7 DIPI-II + \beta_8 DIPIII + \beta_9 UNI + \beta_{10} URBAN + \beta_{11} MARRIED + \beta_{12} HMA10 + \beta_{13} HMB10 + \beta_{14} EXP + \beta_{15} EXPSQ + \varepsilon \quad (6.3)$$

Where :

LnW	Natural logarithm of hourly wages
NS	= 1 if no schooling; = 0, otherwise
SUB-PRIM	= 1 if sub-primary school; = 0, otherwise
JHS	= 1 if a person has junior high school certificate; =0, otherwise
VJHS	= 1 if a person has vocational junior high school certificate; =0, otherwise
SHS	= 1 if a person has senior high school certificate; =0, otherwise
VSHS	= 1 if a person has vocational senior high school certificate; =0, otherwise
DIPI-II	= 1 if a person has diploma I and II; =0, otherwise
DIPIII	= 1 if a person has diploma III; =0, otherwise
UNI	= 1 if a person has university degree; =0, otherwise
URBAN	= 1 if urban; =0, otherwise
MARRIED	= 1 if married; =0, otherwise
HMA10	= Total number of family members aged over 10 years
HMB10	= Total number of family members aged under 10 years
EXP	= Working experience (age – years of schooling – 6)
EXPSQ	= Working experience squared

The dependent variable is the natural logarithm of the sum of hourly wage of workers. In this study, wage is defined as compensation received by the workers / employees on hourly basis in the form of money or goods, paid by the company / agency / employer. Wage or salary received is after deducting the pieces compulsory contributions, income tax and so on.

In this analysis, different levels of educational attainment are used to capture the effects of education on earnings. Schooling in Indonesia as recorded in the Indonesian labour force survey data consists of primary school, which starts at the age of 7 and finishes at the age of twelve (6 years of schooling), followed by secondary education (6 years of schooling) and tertiary education (4 years of schooling). Secondary education consists of lower secondary education, more commonly known as junior high school, which lasts for three years, and upper secondary education, also known as senior high school, which also lasts for three years and in total completed 12 years of schooling. As in other several countries, in Indonesia at secondary school level there are several types of vocational high schools, such as technical high schools. Meanwhile, tertiary education includes diplomas I-III (1-3 years of schooling) and bachelor's degree (4 years), post-graduate degree. Individuals who completed college education or higher have 16 years of schooling in total. Respondents who have primary school or 6 years of schooling are used as the reference group.

In this study I applied dummy variables to represent different level of educational attainment and primary education use as omitted category. Dummy variables are used to examine workers' educational qualification; this will help to classify their educational attainment, whether they graduated from elementary school, junior high school, senior high school or vocational high schools and universities. This, however, has been thoroughly explained in chapter 4. An example of study that uses categorical level is Psacharopoulos (1981) who uses dummy variables to represent different level of educational attainment. It is

expected that those with university degree will earn more than those with secondary schooling, and secondary graduates will earn more than primary school certificate holders. Since experience is not available from the data set, a proxy variable will constructed by subtracting years of schooling and six from the age (experience = age – years of schooling-6). This variable is expected to have a positive effect on earnings. The squared term of experience is incorporated in the regression to reflect the concave shape of the experience-earning profile.

Furthermore, the independent variables for personal characteristic are marital status, residential location, and the number of children in the household. Married, male and urban are reported as dummy variables with one being married, being male and being urban. Male variable is used in a pooled sample and it included in the analysis to observe the effects of male employment on earnings. The marital status included in the model based on the hypothesis that married men are more mature, stable and less likely to quit their jobs than unmarried workers and consequently contribute to higher earnings. On contrary, married women tend to contribute lower earnings due to family responsibilities. In addition, there are two demographic variables to be considered in this estimation. The first is the number of young people in the family, as this number leads to an increase in the opportunity cost of participating in the paid labour force, while the second is family member who aged above ten years old.

There are many other factors that determine individual earnings, some related to the inheritability of traits (such as innate abilities), and others related to the family income and social environment. Among environmental factors, some are only loosely related to public policy such as social norms, work ethic, while others can be greatly affected by the policy such as public support for early childhood, elementary, secondary and higher education, as

well as redistributive policies (e. g. tax and transfer schemes) which may reduce or increase the financial and other barriers to accessing higher education. Because this study is run in the Indonesian labour force survey data, it is difficult to find factors that influence an individual's income to be included in income estimation model. In subsequent chapters, it is considered as unobserved factors.

Sample selectivity may occur because earnings are observed only on individuals participating in the paid labour force (a non-random sample of individual). There are several reason for no mention of sample selection issues. First, the observation was designed in concern to randomisation in the level of province, region and district in order to cover a reliable and representative results. In this case, it covered all provinces in Indonesia with proportionate samples in each region. Second, several data were missing from the analysis as some respondents did not want to disclose information related to wages, only employees from employee category who had provided complete information about wages, which was the main concern in this research. In order to avoid bias results, it was decided to include employees only into the analysis. The effect of including missing values into the analysis could lead into the false interpretation of results (for example the data from individual who did not list the wage, if it was forced into the analysis and assumed to be zero, would drag the wage average to be smaller than the true value and we did not want this to happen). Third, the analysis required response variable to be the identifier of workers and non-workers. Unfortunately not everyone was answering this particular question thus the accurate information could not be gained from the result of the analysis. Since the employment in Indonesia is in non-formal labour markets where hours and days worked are highly variable and choice-based, especially for female employees, the standard earnings function with strict identifying restrictions for sample selectivity is untenable. Therefore I estimate using OLS

with expanded earnings function that includes marital status, children and residential location but that does not control for sample selectivity.

6.3 Data Descriptive Analysis

Table 6.1 presents descriptive statistics for the Indonesian labour force in 1986, 1989, 1999 and 2009. The report describes the average hourly wage rate by gender. The data suggest that male labour force participants are older than their female counterparts in all selected data. The same trend appears in terms of average wage rate, with male workers receiving higher wages than female workers. One reason for the average wage rate differential is the difference in average age. The increase in average wage rate and

Table 6. 1: Average Wage Recipients for Indonesian National Labour Force Survey

	1986*		1989		1999		2009	
Variable	Males	Females	Males	Females	Males	Females	Males	Females
Average hourly wage rate	741	400	548	377	1724	1430	7079	6265
Age in years	33.8	31	35.4	31.6	35.3	32.7	36.1	33.6
Proportion of individuals having completed								
No Schooling	0.061	0.182	0.048	0.126	0.023	0.069	0.010	0.016
Sub-primary	0.178	0.223	0.139	0.173	0.089	0.119	0.081	0.073
Primary	0.298	0.222	0.286	0.237	0.264	0.236	0.166	0.136
General Junior High School	0.116	0.056	0.127	0.071	0.150	0.100	0.159	0.118
Vocational Junior High School	0.028	0.013	0.026	0.010	0.022	0.010	0.015	0.008
General Senior High School	0.122	0.077	0.154	0.115	0.214	0.157	0.244	0.199
Vocational Senior High School	0.137	0.181	0.141	0.195	0.130	0.158	0.142	0.121
Diploma I-II	0.010	0.013	0.012	0.018	0.018	0.041	0.028	0.086
Diploma III	0.026	0.022	0.029	0.030	0.027	0.041	0.028	0.064
University	0.024	0.011	0.038	0.024	0.063	0.070	0.127	0.179
Average hourly wage rate in US Dollars	0.45	0.24	0.30	0.21	0.24	0.20	0.75	0.66
Indonesian exchange rate to US dollar	1641		1797		7085		9400	

Note: *Behrman and Deolalikar (1995)

educational attainment over this time was quite remarkable. However, the average wage rate declined from 1986 to 1989, and then increased by more than 300 per cent within 10 years for both males and females.

This decline in average wage rates was not surprising as minimum wages were not enforced in practice until 1989 (Cann, 1982; Rama, 2001). Note that the change in the exchange rate of the Indonesian currency to the US dollar after the 1997 financial crisis was quite significant. In 1996, before the financial crisis hit Southeast Asia, the Indonesian exchange rate to the US dollar was 2,383 rupiah to one US dollar; after the financial crisis in 1998, the Indonesian rupiah fell dramatically, with one US dollar equalling 8,025 rupiah, before stabilizing at around 9,000 rupiah per US dollar in 2010[17].

Table 6. 2: Minimum Wage, Average Wage and Productivity, 1988-1994.

Minimum Wages as a Fraction Of:	*1988*	*1989*	*1990*	*1991*	*1992*	*1993*	*1994*
Average Productivity per Worker							
Total Output	0.199	0.175	0.177	0.200	0.215	0.198	0.217
Output Excluding Oil and Gas	0.235	0.206	0.209	0.234	0.249	0.220	0.239
Value Added in Large Manufacturing	0.062	0.051	0.051	0.061	0.057		
Value Added in Small Manufacturing				0.256		0.355	
Labor Costs per Worker, by Sector							
Wages of Urban Laborers & Employees	0.349	0.333	0.319	0.379	0.398	0.380	0.424
Wages in Manufacturing	0.352	0.337	0.372	0.440			
Labor Costs in Large Manufacturing	0.278	0.253	0.255	0.275	0.254		
Labor Costs in Small Manufacturing				0.761		0.931	
Labor Costs per Worker, by Gender							
Wages of Male Urban Laborers & Employees	0.312	0.285	0.281	0.332	0.349	0.335	0.375
Wages of Female Urban Laborers & Employees	0.495	0.448	0.462	0.539	0.562	0.526	0.579
Wages of Male Workers in Manufacturing	0.321	0.309	0.343	0.410			
Wages of Female Workers in Manufacturing	0.474	0.449	0.488	0.567			

Source: Rama (2001)

The proportion of males and females who have completed each level of education varies between genders. The highest proportion of individuals having completed primary school are males while the highest proportion with diplomas are females. Although, in

[17] The currency crash coincided with Indonesia's worst drought of the twentieth century. The effects were more drastic than the economic crises of the 1960s or the Great Depression of 1929–31 (Vickers, 2005)

general, female workers have less schooling than male workers do, the school attainment for both males and females tends to increase significantly. In 1986, 6.1 per cent of the full-time male workforce had no schooling, dropping to 1 per cent in 2009. At the same time, the lack of schooling among the female workforce showed the same trend as male workers, from 18.2 per cent in 1986 declining to 1.6 per cent in 2009. Up to 1989, females made up the higher percentage of sub-primary education workers or those who dropped out during primary school. Cann (1982) lists certain factors responsible for the dropout problem in Indonesia: (1) parents have insufficient income to pay the school tuition fees associated with traditional schools[18]; (2) schools are too far away from the children's homes; (3) children need to remain at home to help the family earn income or assist with household chores; (4) there is a shortage of school buildings; (5) children feel too embarrassed to remain in school if they have fallen behind their peers; and (6) many families suffer from chronic illness.

In the 1986, 1989, 1999 and 2009 survey data, the percentages of male educational attainment in primary school, junior high school, vocational junior high school and senior high school tended to be higher than for females. Meanwhile, there were a higher percentage of vocational senior high school female workers than male workers. There was no gap between male and female educational attainment in higher-level education. At university level, until 1986 female higher educational attainment was lower than that of males. However, for the past ten years in the Indonesian labour market, the female workforce has been slightly better educated than the male workforce.

[18] Prior to 1989, nine years compulsory basic education was not implemented; therefore every parents who had children in the school must pay certain amount of school tuition fees.

6.4 Differences in Returns to Education

In this section, the discussion mainly focuses on the rates of return to education and earnings differentials between male and female. The analysis followed with the effect of experience and residential location among gender. First of all, the effect of education on an individual's earnings during the period 1989-2009. Later in this section, I will compare these findings with the results of existing study by using the same model specifications. The reason to use same mode specification is to compare and contrast the results and trend in the earnings estimation. The main earnings model specification in this section is in equation 6.3 which has applied through table 6.3, table 6.5 until 6.7. Unlike previous tables which provide differences in returns to education and male-female earnings differentials. Table 6.8 and 6.9 provide earnings estimation based on residential location. The model specification also slightly different where urban variable substituted by male variable. To compute rates of return to education based on residential location between male and female employees, urban-rural regression run separately.

Table 6.3 presents the earnings equation estimates by gender during 1989-2009. These findings compared to previous study by Behrman and Deolalikar (1995). The model and specification used in this table is in equation 6.3, where primary school as omitted category. The reason to omit primary school instead of no schooling is to observe the male-female differences in returns to education. This expanded earnings model is included location factors and socio demography (gender, marital status). Meanwhile Behrman and Deolalikar model limited to nine different schooling categories, use age and its quadratic instead of working experience and no schooling category as omitted variable.

The empirical estimates of earnings equations for both male and female workers are presented in Table 6.3. The dependent variable is log hourly wage. The t-statistics for each parameter are large in general, indicating the quality of coefficient estimates. The education variables do significantly affect earnings, while no schooling and sub-primary educations have a negative effect on earnings. The estimated coefficients reveal that the effect of education on earnings is larger as the educational level increases. This result is similar to that of Behrman on the effect of education on earnings in Indonesia, which proves that earnings increase for those with higher levels of education. The return to university education is the highest among all the levels of education. This is in line with Ashworth (1997) study in the United Kingdom; this study was aimed to examine the effect of return to higher education. Through this research, Ashworth found a high private return before and post-expansion of higher education period.

Further, levels of education contribute to and have a positive impact on earnings for male and female workers during the period 1989-2009, and there are several reasons for this, such as increase in school enrolment, scarcity of skilled workers, increasing number of educational institutions, and the implementation of the law on compulsory basic education.

Table 6. 3: Earnings Equation Estimates by Gender, 1989-2009.

Variables	1986[a]				1989				1999				2009			
	Females		Males		Females		Males		Females		Males		Females		Males	
	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio
INTERCEPT	7.400	124.4	7.34	171.5	9.857	403.5	10.198	659.8	11.268	376.4	11.685	603.5	12.511	885.3	13.144	1360.5
AGE	0.038	11.8	0.078	34.9												
AGESQ	0.000	-8.9	-0.001	-28												
NS					-0.322	-13.6	-0.291	-16.2	-0.188	-5.9	-0.198	-6.4	-0.169	-5.4	-0.233	-8.8
SUB-PRIM	0.304	11.7	0.218	9.9	-0.278	-14.1	-0.225	-19.3	-0.215	-8.6	-0.159	-9.2	-0.031	-1.9	-0.052	-5.02
PRIM	0.533	19.6	0.458	21.8												
JHS	1.409	40.8	0.984	42	0.519	20.5	0.302	25.5	0.368	14.4	0.241	16.9	0.262	18.7	0.152	17.8
VJHS	0.997	26.0	0.752	32	0.682	11.5	0.307	13.6	0.506	7.5	0.306	9.9	0.367	9.05	0.17	8.2
SHS	1.499	55.1	0.936	40.7	1.015	47.0	0.612	53.6	0.855	38.2	0.578	43.0	0.654	52.9	0.453	58.2
VSHS	1.041	14.8	0.693	20	1.106	61.3	0.663	57.9	1.024	47.2	0.638	42.2	0.776	55.7	0.461	52.1
DIPI-II	1.637	23.6	0.988	20.2	1.343	29.8	0.889	27.8	1.303	36.9	1.002	24.2	0.987	63.8	0.785	50.03
DIPIII	1.750	31.9	1.228	35.8	1.502	41.6	1.026	47.4	1.397	39.2	1.012	36.1	1.131	67.4	0.9	57.02
UNI	1.968	26.2	1.497	42.1	1.672	42.0	1.212	63.2	1.438	49.1	1.115	55.9	1.292	101.3	1.088	118.4
URBAN					-0.015	-1.1	0.105	13.8	-0.016**	-1.08	0.055	5.9	-0.007	-0.9	0.008*	1.6
MARRIED									0.088	5.3	0.074	5.1	0.196	24.3	0.234	36.5
HMA10					-0.01	-3.7	0.005	3.1	-0.007*	-1.7	-0.002**	-0.7	0.003**	1.5	-0.011	-7.09
HMB10					0.022	3.8	0.01	3.3	-0.005**	0.6	-0.001**	-0.2	0.006**	1.3	-0.004**	-1.3
EXP					0.059	32.3	0.06	52.6	0.05	22.7	0.047	28.9	0.054	60.5	0.033	53.1
EXPSQ					-0.001	-22.7	-0.001	-36.7	-0.001	-15.9	-0.001	-21.9	-0.001	-23.7	0	-18.9
R-squared	0.420		0.300		0.529		0.427		0.471		0.328		0.439		0.331	
Sum squared residual					3221.2		6252.7		3182.0		6266.2		22168.6		37733.8	
F-statistic					773.5		1210.6		508.5		627.1		2214.7		2650.01	
Numbers of observations	8,586		21,643		9,741		23,005		8,687		18,580		42,745		81,010	

Note : (i) [a]Behrman and Deolalikar (1995);
(ii) all coefficients are significant at 1 per cent level unless indicated otherwise;
(iii) *significant at 5 per cent level; ** not statistically significant.

There is a positive relationship between levels of education and earnings, although until the 1980s few school-aged children entered formal education, and many of them dropped out before completing primary education. However, after the 1980s, there was significant enrolment at all levels of education. As a result, earnings increased gradually with the level of education for both males and females during the period 1989-2009.

There is a scarcity of skilled workers, especially workers with college level education; therefore, workers who have higher education earn higher wages. The regression coefficients of educational levels and other independent variables estimate the percentage change of workers' hourly earnings (see Table 6.3).

The Indonesian government has built new school institutions, especially primary schools, across the whole country. Furthermore, in 1989, under Law No. 20/2003, the government of Indonesia made it compulsory for everyone to attend nine years' basic education. As a result, many young children have gained access to formal education.

According to human capital theory, education contributes to and has a positive impact on earnings, and, as expected, education has a positive sign for both male and female workers during the study period, implying that additional education produces higher returns. The result also shows that the estimated coefficients of education variables are generally higher for females than for males. This result is consistent with the finding of Behrman (1995) that womens experience stronger returns on education compared to male workers. However, Behrman's work only estimates the effect of educational level and age on workers' earnings. This research attempts to fill the gap in previous studies on gender earnings differentials on education, which is why this research includes residential area, working experience and marital status variables in the estimation.

Table 6.3 provides additional evidence for the return to education, showing that the university level has the highest return while vocational junior high school has the lowest. Schooling has a more significant effect on the level of earnings for females than for their male counterparts. Without schooling, the income of male workers declined from 29.2 per cent in 1989 to 23.3 per cent in 2009, while for females it declined from 32.2 per cent in 1989 to 16.9 per cent in 2009. Workers with sub-primary educational qualifications show a lower percentage on income level and have negative signs for both male and female workers compared to those who completed primary education.

In general, junior education shows a falling rate of return for both male and female workers during the period 1989-2009. Interestingly, a female worker with 9 years of schooling earns more than her male counterpart. For example, in 1989 females received 51.9 per cent earnings compared to male workers, who received only 30.2 per cent. The same trend is also shown in 2009 where male workers earn less than females, at 15.2 per cent and 26.2 per cent respectively. At the same time, the return to senior high school also shows a similar trend to that described in the junior education level, with females earns more than males compared to those who did not complete primary education. Finally, in Indonesia, as in other countries such as in the United Kingdom (Ashworth, 1997), that higher education involved highly costs; however, it shows a stronger impact on earnings. Among the three levels of higher education, a female worker with university education shows the highest level of earnings and, again, females earn more than male workers do. In 1986, the premium earnings of female workers with university education were 196.8 per cent, dropping to 143.8 per cent in 1999 and 129.2 per cent in 2009 relative to individuals with no primary education. On the other hand, during the period 1989-2009 earnings of male workers with university

education dropped from 121.2 per cent to 108.8 per cent relative to those without primary education. There is also a clear sign that the effect of education on earnings decreased over the study period even though the effect is still large compared with those without education. This is not surprising since, for the last two decades, female's participation in the paid labour force has increased significantly in Indonesia. Moreover, female's enrolment in higher education has also risen sharply. This result brings us to the conclusion that female employees are obtaining higher benefits when they have higher levels of education. It is important to observe how the return to education changes during the study period in this country; these results can be used for educational policy planning. The fact that education has a more significant effect on female earnings is clear. These results mean that higher educational qualifications are always associated with higher earnings. In addition, there is a narrower range of formal occupations held by more educated workers, both male and female.

Table 6.4 is presented using Behrman and Deolalikar's (1995) models, where omitted variable is no schooling. The purpose of this table is to compare my empirical results to previous study using same specification model. Further, this table also to show the trend of the effect of education on earnings from 1986 until 2009. Table 6.4 shows that the results is in line with the previous study where education is important variables in determining the earnings.

Table 6.4 provides comparison estimation with the same equation as that of Behrman and Deolalikar's (1995) study. The age variable shows a positive effect on earnings for both males and females during the study period. An additional year of workers' age increases the earnings of male and female workers. The female returns to university education are higher than those of males, at 176.6 per cent in 1989 and 176.2 per cent in 2009, relative to those who have no primary education. The effect of age on earnings is higher for male workers

than for female workers; this result may be due to the fact that the average age for the male sample is higher than the average age for the female sample. During the period 1989-2009, the result indicates that the coefficients of the dummy variable for all educational levels are generally higher for females than for males. This result is also confirmed by Behrman and Deolalikar's (1995) finding that the rate of return to education is higher for females than for males.

Tables 6.5 until 6.6 present the estimation results for log hourly wage of male and female workers during the period 1989-2009. The equation was estimated without working experience, but the age variable was included in the equation. In 1989, the result was no better than the result with the working experience variable in the equation. However, the regression results of 1999 and 2009 data showed better findings.

Table 6.5 provides additional evidence of the gender earnings over age, education, living area, total members of family and working experience in 1989. The results of the regression are presented in Table 6.5. Columns 1-8 indicate that all the education variables significantly affect earnings. Before the financial crisis in 1997, the Indonesian economy under the Suharto regime had been growing gradually at a stable rate; therefore, workers with no education and sub-primary education had a negative impact on earnings. The effect of university education on workers' earnings is higher for female workers in all estimated models. According to columns 7 and 8, for instance, the effect of university education on earnings is higher for females at 167.2 per cent than for males at 121.2 per cent, relative to those with no primary education. The working experience variable is sufficiently significant and relevant to include in the equation, as one year of working experience will increase female and male earnings by 5.9 per cent and 6.0 per cent respectively, despite the fact that there are small coefficients in the male and female subsamples.

Table 6. 4: Earnings Equation Estimates, by Gender, 1989-2009.

Variables	1986[a]				1989				1999				2009			
	Females		Males		Females		Males		Females		Males		Females		Males	
	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio
INTERCEPT	7.400	124.4	7.340	171.5	3.559	179.8	3.934	103.703	5.234	80.582	5.669	110.630	6.086	130.878	6.817	187.252
AGE	0.038	11.8	0.078	34.9	0.068	21.4	0.072	36.361	0.059	16.212	0.057	23.528	0.052	24.277	0.049	33.713
AGESQ	0.000	-8.9	-0.001	-28	-0.001	-15.5	-0.001	-26.484	-0.001	-10.822	-0.001	-16.417	0.000	-10.718	0.000	-19.600
SUB-PRIM	0.304	11.7	0.218	9.9	0.158	6.6	0.171	8.786	0.073	2.149	0.116	3.484	0.231	6.912	0.217	7.886
PRIM	0.533	19.6	0.458	21.8	0.383	15.8	0.378	20.721	0.289	8.948	0.268	8.589	0.402	12.424	0.299	11.177
JHS	1.409	40.8	0.984	42	0.786	25.8	0.626	31.685	0.557	15.078	0.462	14.346	0.748	22.763	0.472	17.564
VJHS	0.997	26.0	0.752	32	0.992	16.0	0.642	23.089	0.694	9.530	0.528	12.476	0.674	13.218	0.450	13.723
SHS	1.499	55.1	0.936	40.7	1.184	43.7	0.860	44.344	0.970	28.326	0.751	23.731	1.125	35.033	0.769	28.904
VSHS	1.041	14.8	0.693	20	1.318	54.8	0.910	46.573	1.173	35.044	0.810	24.964	1.276	39.129	0.791	29.369
DIP I-II	1.637	23.6	0.988	20.2	1.540	31.9	1.123	31.075	1.455	33.310	1.170	26.342	1.519	45.832	1.143	38.229
DIP III	1.750	31.9	1.228	35.8	1.613	40.5	1.227	45.448	1.464	33.331	1.150	28.707	1.621	47.562	1.213	40.423
UNI	1.968	26.2	1.497	42.1	1.766	40.9	1.399	56.210	1.476	38.028	1.229	35.388	1.762	54.955	1.404	52.031
R-squared	0.42		0.3		0.512		0.401		0.449		0.319		0.407		0.306	
Sum squared residual					3342.09		6536.24		3308.93		6488.77		23407.15		39132.4	
F-statistic					917.56		1384.37		637.30		783.67		2656.18		3223.46	
Numbers of observations	8,586		21,643		9,741		23,005		8,687		18,580		42,745		81,010	

Note : (i) [a]Behrman and Deolalikar (1995);
(ii) all coefficients are significant at 1 per cent level unless indicated otherwise.

Table 6. 5: Earnings Equation Estimates, by Gender, 1989.

Variables	1989															
	Females		Males		Females		Males		Females		Males		Females		Males	
	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio
	(1)		(2)		(3)		(4)		(5)		(6)		(7)		(8)	
INTERCEPT	3.942	77.639	4.312	123.359	4.031	74.083	4.265	111.993	3.956	77.361	4.325	122.698	4.664	187.719	4.985	309.381
AGE	0.068	21.428	0.072	36.361	0.067	20.854	.071	34.922	0.066	20.479	0.067	32.581				
AGESQ	-0.001	-15.577	-0.001	-26.484	-0.001	-15.124	-0.001	-25.554	-0.001	-14.502	-0.001	-23.217				
NS	-0.383	-15.894	-0.378	-20.721	-0.397	-16.225	-0.351	-19.120	-0.387	-15.869	-0.352	-19.279	-0.322	-13.647	-0.291	-16.272
SUB-PRIM	-0.225	-11.524	-0.208	-17.829	-0.232	-11.809	-0.187	-15.943	-0.231	-11.765	-0.189	-16.166	-0.278	-14.121	-0.225	-19.347
JHS	0.403	15.752	0.247	20.710	0.412	16.050	0.229	19.138	0.408	15.948	0.231	19.362	0.519	20.516	0.302	25.581
VJHS	0.608	10.045	0.264	11.440	0.616	10.179	0.247	10.768	0.606	10.019	0.249	10.838	0.682	11.512	0.307	13.610
SHS	0.801	36.673	0.481	42.767	0.813	36.671	0.451	39.414	0.815	36.771	0.458	40.049	1.015	47.050	0.612	53.669
VSHS	0.935	48.941	0.532	45.696	0.941	49.097	0.519	44.539	0.935	48.868	0.522	44.919	1.106	61.360	0.663	57.954
DIPI-II	1.156	25.020	0.745	22.840	1.165	25.177	0.735	22.622	1.157	25.037	0.741	22.819	1.343	29.853	0.889	27.889
DIPIII	1.230	33.164	0.848	38.459	1.238	33.225	0.823	37.341	1.238	33.255	0.830	37.670	1.502	41.643	1.026	47.460
UNI	1.382	33.742	1.021	52.421	1.399	33.957	0.988	50.523	1.395	33.933	0.996	51.024	1.672	42.031	1.212	63.244
URBAN					-0.015	-1.173	0.104	13.440	-0.018	-1.391	0.107	13.827	-0.015	-1.182	0.105	13.807
HMA10					-0.012	-4.161	0.003	1.797					-0.010	-3.709	0.005	3.191
HMB10									0.031	5.309	0.018	5.882	0.022	3.871	0.010	3.382
EXP													0.059	32.370	0.060	52.636
EXPSQ													-0.001	-22.781	-0.001	-36.710
R-squared	0.512		0.401		0.513		0.406		0.513		0.407		0.529		0.427	
Sum squared residual	3342.09		6536.24		3335.05		6482.32		3331.3		6473.4		3221.2		6252.7	
F-statistic	917.5		1384.3		779.4		1195.60		781.1		1199.6		773.5		1210.6	
Numbers of observations	9,649		22,779													

Note : all coefficients are significant at 1 per cent level unless indicated otherwise.

Table 6.6 presents a similar result to that illustrated in Table 6.5. All the education variables have a positive effect on earnings, implying that additional education produces higher returns for both male and female workers during this period. The result also provides an insight into the variation of gender earnings over education. Regression analysis reveals that an additional year of schooling will increase earnings in all regression estimations for the female rather than the male subsample in this period. In columns 1 and 2, for example, the rate of return of female education ranges from 26.8 per cent to 118.6 per cent compared to the male rate of return to education from 19.4 per cent to 96.1 per cent, relative to those with no primary education. This proves that females earn higher wages as female employees' education increases. Table 6.6 also depicts earnings differentials by gender with reference to location, working experience and marital status. There are positive relationships between earnings and location, working experience and marital status of male and female groups.

Finally, in Table 6.7 columns 7 and 8 have more robust estimation results compared to other regression results in the previous columns. This indicates that working experience is more relevant rather than the age variable in the equation. Although the age variable shows a positive effect on higher rate of return on earnings at 3.3 per cent and 3 per cent in columns 5 and 6 respectively, adding working experience to the equation would increase the R-squared from 40.6 per cent in column 1 to 43.9 per cent in column 7. Since working experience is derived from the age of the workers and years of schooling – 6 (working experience = age - years of schooling – 6) on the belief that individuals start schooling at the age of 6 and enter the labour market upon completing schooling. It is confirmed that the age variable is already included in the estimation.

All independent variables are significant except for urban in column 5, 7 and 8, HMA10 in column 7, HMB10 or children in the household for both male and female groups. As expected, the married variable appears to have a positive effect on earnings of males and females. This variable has a higher effect on male workers' earnings.

Table 6. 6: Earnings Equation Estimates, by Gender, 1999.

Variables	1999															
	Females		Males		Females		Males		Females		Males		Females		Males	
	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio
	(1)		(2)		(3)		(4)		(5)		(6)		(7)		(8)	
INTERCEPT	5.524	91.175	5.938	138.733	5.813	85.800	6.165	123.124	5.776	88.461	6.151	127.755	6.142	210.597	6.520	323.382
AGE	0.059	16.212	0.057	23.528	0.039	9.801	0.040	13.859	0.040	9.849	0.040	13.802				
AGESQ	-0.001	-10.822	-0.001	-16.417	0.000	-5.742	.000	-9.524	0.000	-5.730	0.000	-9.447				
NS	-0.289	-8.948	-0.268	-8.589	-0.278	-8.598	-0.257	-8.233	-0.275	-8.498	-0.255	-8.204	-0.188	-5.934	-0.198	-6.442
SUB-PRIM	-0.217	-8.865	-0.152	-8.876	-0.213	-8.718	-0.146	-8.575	-0.211	-8.665	-0.147	-8.597	-0.215	-8.651	-0.159	-9.282
JHS	0.268	10.535	0.194	13.716	0.277	10.928	0.187	13.110	0.277	10.947	0.186	13.102	0.368	14.465	0.241	16.924
VJHS	0.404	5.946	0.260	8.358	0.421	6.229	0.256	8.254	0.421	6.236	0.256	8.244	0.506	7.578	0.306	9.964
SHS	0.681	31.159	0.483	37.702	0.704	31.676	0.471	35.612	0.705	31.669	0.471	35.622	0.855	38.266	0.578	43.038
VSHS	0.884	40.240	0.542	36.473	0.890	40.488	0.535	35.587	0.890	40.475	0.534	35.578	1.024	47.294	0.638	42.290
DIPI-II	1.165	32.381	0.901	26.532	1.162	32.372	0.902	26.627	1.163	32.394	0.902	26.634	1.303	36.978	1.002	29.909
DIPIII	1.174	32.594	0.881	31.458	1.194	33.083	0.868	30.808	1.194	33.077	0.868	30.804	1.397	39.233	1.012	36.135
UNI	1.186	40.570	0.961	49.120	1.205	40.795	0.949	47.818	1.205	40.802	0.950	47.824	1.438	49.154	1.115	55.983
URBAN					-.012**	-0.838	0.057	5.997	-0.014**	-0.982	0.056	5.952	-0.016**	-1.080	0.055	5.932
HMA10					-.007**	-1.698	-0.003	-1.066					-0.007*	-1.734	-0.002**	-0.752
HMB10									0.010**	1.295	0.005**	1.082	0.005	0.646	-0.001**	-0.268
EXP													0.050	22.771	0.047	28.965
EXPSQ													-0.001	-15.985	-0.001	-21.975
MARRIED					0.161	10.03	0.140	9.91	0.160	9.755	0.140	9.869	0.088	5.323	0.074	5.140
R-squared	0.449		0.319		0.457		0.324		0.457		0.324		0.471		0.338	
Sum squared residual	3308.9		6488.7		3265.2		6440.1		3265.7		6440.1		3182.07		6304.6	
F-statistic	637.3		783.6		515.4		630.2		515.3		630.2		508.5		627.1	
Numbers of observations	8.599		18414													

Note : (i) all coefficients are significant at 1 per cent level unless indicated otherwise;
(ii) * significant at 5 per cent level; ** not statistically significant.

Table 6. 7: Earnings Equation Estimates, by Gender, 2009.

Variables	2009															
	Females		Males		Females		Males		Females		Males		Females		Males	
	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio
	(1)		(2)		(3)		(4)		(5)		(6)		(7)		(8)	
INTERCEPT	6.489	174.313	7.116	271.064	6.682	160.099	7.442	243.297	6.736	169.033	7.386	254.664	7.449	518.467	8.007	797.707
AGE	0.052	24.277	0.049	33.713	0.034	14.522	0.029	17.050	0.033	14.000	0.030	17.811				
AGESQ	0.000	-10.718	0.000	-19.600	0.000	-3.493	0.000	-7.399	0.000	-2.912	0.000	-8.207				
NS	-0.402	-12.424	-0.299	-11.177	-0.367	-11.355	-0.290	-10.854	-0.372	-11.508	-0.289	-10.817	-0.169	-5.410	-0.233	-8.864
SUB-PRIM	-0.171	-10.185	-0.083	-7.777	-0.161	-9.563	-0.079	-7.495	-0.161	-9.615	-0.080	-7.509	-0.031*	-1.941	-0.052	-5.021
JHS	0.346	23.953	0.173	19.925	0.343	23.820	0.170	19.653	0.342	23.757	0.170	19.632	0.262	18.759	0.152	17.849
VJHS	0.271	6.502	0.151	7.227	0.279	6.719	0.147	7.059	0.280	6.726	0.147	7.070	0.367	9.050	0.170	8.291
SHS	0.723	56.879	0.470	59.678	0.728	57.426	0.471	59.393	0.729	57.487	0.470	59.334	0.654	52.934	0.453	58.293
VSHS	0.874	61.476	0.491	55.136	0.876	61.610	0.491	54.612	0.879	61.883	0.491	54.559	0.776	55.701	0.461	52.138
DIPI-II	1.117	71.030	0.844	53.049	1.109	70.683	0.850	53.618	1.109	70.692	0.850	53.578	0.987	63.809	0.785	50.039
DIPIII	1.219	70.768	0.914	57.032	1.219	70.982	0.918	57.251	1.219	70.972	0.918	57.242	1.131	67.427	0.900	57.023
UNI	1.360	104.067	1.105	119.060	1.361	104.110	1.108	118.284	1.361	104.131	1.107	118.207	1.292	101.369	1.088	118.452
URBAN					0.007**	0.931	0.015	2.901	0.009	1.226	0.014	2.693	-0.007**	-0.935	0.008**	1.607
MARRIED					0.167	18.9	0.159	21.08	0.158	17.619	0.167	21.551	0.196	24.323	0.234	36.584
HMA10					0.009	4.536	-0.009	-5.692					0.003**	1.572	-0.011	-7.091
HMB10									0.009	1.984	-0.002**	-0.578	0.006**	1.337	-0.004**	-1.313
EXP													0.054	60.540	0.033	53.167
EXPSQ													-0.001	-23.786	0.000	-18.971
R-squared	0.407		0.306		0.412		0.311		0.412		0.310		0.439		0.331	
Sum squared residual	23407.1		39132.4		23207.4		38875.7		23216.5		38891.2		22168.6		37733.8	
F-statistic	2656.1		3223.4		2130.9		2587.2		2128.9		2583.9		2214.7		2650	
Numbers of observations	42,517		80,411													

Note : (i) all coefficients are significant at 1 per cent level unless indicated otherwise;
(ii) * significant at 5 per cent level; ** not statistically significant.

6.5 Returns to Education by Experience

Table 6.3 provides additional results on rate of return to education and gender earnings differentials. As expected, the effect of working experience is positive while working experience squared is negative, showing an inverted U-shaped curve. This indicates that the more work experience an individual has, the higher the earnings he/she will gain. The effect of an additional year of experience reaches a peak at a certain point and then tends to decline over time. The sign demonstrates that the returns of work experience for males are higher than for female workers in 1989 and 2009. However, in 1999 the returns to working experience of females are slightly higher than those of male workers. An additional year of work experience raises the earnings of female workers from 5.9 per cent in 1989 and at 5.4 per cent in 2009. Meanwhile an additional year of experience for male workers tends to increase wages at lower rate trend from 6 per cent to 3.3 per cent during the period 1989-2009. These findings are consistent with previous research (Feridhanusetyawan et al., 2001) and research in other countries (Ashraf, 1994).

6.6 Returns to Education by Residential Location

The composition of the Indonesian population in terms of location can be divided into two groups: urban and rural areas. For the most part, people living in rural areas work in the informal sector, where economic activities are generally traditional; there is no clear organizational structure, no bookkeeping and no clear ties between employers and workers. In contrast, urban workers mostly work in the formal sector where economic activity is documented in terms of wages and working hours. In order to estimate the return to education in rural and urban areas, wage functions are estimated separately, and the

results are presented in Table 6.8. In this table, the urban sample dominates the estimation of the returns to education for Indonesia. These data represent the composition of the Indonesian labour force where formal employment is mostly available in urban areas even though the majority of the Indonesian population live in rural areas; the terms 'rural' and 'urban' areas in this analysis refer to residency of the sample data. The effects of education, working experience, gender and marital status on earnings differ between rural and urban areas. The location where the individuals live has a significant impact in determining earnings. The structures of earnings vary between rural and urban areas. All coefficient estimates are statistically significant at the 1 per cent level unless indicated otherwise.

Table 6.8 shows that the earnings of male and female workers living in urban and rural areas are slightly different. In 1989, the returns to vocational senior high school education and diploma III are higher in the rural than in the urban areas, meanwhile for all senior high school levels of education and university graduate are higher return to workers who reside in urban areas. Unlike 1989, in 2009, the returns to all levels of education, working experience, and married workers are higher in urban areas than in rural areas[19]. Over the last two decades, the rural-urban balance of earnings of workers in the Indonesian labour market has tended to change from favouring workers who reside in rural areas to favouring those living in urban areas. This finding is also supported by data from 1999 showing that earnings were dominated by urban than rural workers. Table 6.8 reveals that there were more earnings of individuals with no schooling in rural areas than in rural

[19] The rural workers have a lower probability of working as salaried employees (Comola and Mello, 2010)

areas during the period 1989-2009. One reason for this may be the possibility that urban workers have more skill job compared to those in rural areas. Therefore, taking the 2009 sample data as an example, rural and urban workers with no schooling will lose earnings by 17.6 per cent and 33.3 per cent respectively compared to those with primary education. On the other hand, urban workers who have university education received higher earnings than rural workers by 19.2 per cent. Both rural and urban workers earned higher by 104.4 per cent and 123.6 per cent compared to those workers who have primary education. Since formal jobs are limited in the rural environment[20], except in the public sector, there were few university-educated workers living in rural areas (Comola and Mello, 2010). Some university-educated workers living in rural areas are working in the public sector. A few of them are working in the formal private sector and a small percentage is self-employed (Alisjahbana and Manning, 2006; BPS, 2010c).

Although male earned more in rural areas than urban areas, table 6.8 shows that male workers' earnings tend to fluctuate and decrease during the period 1989-2009. This result implies that most of the informal workers residing in rural areas worked in the agricultural sector as unskilled workers, and most of these unskilled workers are males who are physically strong but less educated (Comola and Mello, 2011). Furthermore, the estimated equation of rural and urban areas can be divided into the wage equation for male and female workers during the period 1989-2009.

The presence of residual sum of squared, F-test and Chow-test in Table 6.8 provides an insightful analysis of the equation model and whether it is better to divide the

[20] In Indonesia, 70 per cent of the workforce was estimated be engaged in informal employment, mostly in the agriculture sector (Firdausy, 2000).

rural-urban sample data into male and female subsamples. Although the t-test provided in Table 6.7 tests hypotheses about individual regression slope coefficients, tests of more than one coefficient at one time are typically conducted with the F-test, presented in Table 6.7. The F-test explains the overall fit of the estimated regression coefficients. The overall significance of the rural and urban model equations in 1989, 1999 and 2009 is presented in Table 6.8. Since the F-value is greater than the critical F-value in all model equations at the 5 per cent level of significant, the null hypothesis is rejected and it is concluded that rural and urban equations are significantly different.

The Chow test is adopted since the male and female models were regressed separately in urban and rural groups. The Chow test examines the equivalence of regression parameters between two sets of data; as presented in Table 6.8, there are significantly different regression coefficients for the same equation. The null hypothesis is that the parameters are equal between male and female equation models within rural and urban subsamples. The formula of the Chow test is:

$$F = \frac{(RSS_T - RSS_1 + RSS_2)/k + 1}{RSS_1 + RSS_2 / (n_1 + n_2 - 2k - 2)} \qquad (6.2)$$

Where RSS_T is the residual sum of squares from two subsamples (ignoring gender differences within urban or rural areas); RSS_1 and RSS_2 are identical specified regressions on two subsamples (rural males and rural females, for example). K is the number of predictor variables in the model, n_1 is the number of observations in the rural group, and n_2 is the number of observations in the urban group. Accordingly, the Chow test was performed on data for 1989, 1999 and 2009, which are significant at the 1 per cent level of significance. Since the Chow test is greater than F-critical, the null hypothesis is

rejected. The significant Chow test indicates that there are different effects for males and females within urban and rural groups.

Table 6.9 reports that the effect of education on earnings is larger for females than for males, and the earnings show a clear upward trend as the educational level increases during the observation period in both rural and urban areas. Female workers and rural groups have a larger effect on education, suggesting that the effect of an additional year of education on females is estimated as 49 per cent for junior high school and 162.3 per cent for university graduates, relative to those without primary education. In 1989, female workers residing in rural areas received higher earnings than their male counterparts at all levels of education. Similarly, females living in urban areas received higher earnings than males at all educational levels during 1999-2009. During the period 1989-2009, among educational levels, university degree brings the highest rate of earnings for both males and females.

Table 6. 8: Earnings Equation Estimates, by Residential Location, 1989-2009.

	1989				1999				2009			
	Rural		Urban		Rural		Urban		Rural		Urban	
Variables	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio
INTERCEPT	4.754	215.600	4.734	262.879	6.306	231.811	6.252	283.647	7.715	567.041	7.597	697.485
NS	-0.286	-15.987	-0.394	-17.288	-0.200	-7.563	-0.239	-6.430	-0.176	-6.745	-0.333	-10.285
SUB-PRIM	-0.199	-14.485	-0.305	-19.868	-0.172	-9.491	-0.208	-9.111	-0.042	-3.460	-0.067	-5.115
JHS	0.335	17.779	0.361	26.693	0.259	13.648	0.287	16.972	0.182	16.614	0.206	20.709
VJHS	0.353	9.210	0.400	15.250	0.337	7.783	0.373	10.045	0.229	6.937	0.251	11.261
SHS	0.638	30.418	0.740	60.789	0.561	27.691	0.693	46.915	0.404	39.372	0.601	68.233
VSHS	0.873	54.754	0.784	63.240	0.813	41.387	0.756	46.135	0.539	42.510	0.609	63.452
DIPI-II	1.040	22.258	1.042	32.976	1.157	30.462	1.105	35.350	0.835	56.261	0.930	60.144
DIPIII	1.291	30.519	1.151	54.192	1.065	22.473	1.179	46.388	0.910	45.798	1.059	76.866
UNI	1.344	29.916	1.330	68.165	1.056	30.437	1.262	64.308	1.044	82.377	1.236	130.672
MALE	0.343	31.587	0.293	31.998	0.258	20.177	0.207	19.685	0.264	36.262	0.236	43.702
MARRIED					0.058	3.489	0.112	8.136	0.194	23.693	0.228	36.040
HMA10	0.006*	2.281	-0.004*	-2.110	0.008*	2.231	-0.009	-3.346	-0.005*	-2.254	-0.005	-3.739
HMB10	0.033	7.551	0.009	2.719	0.015*	2.302	-0.010*	-1.900	0.010	2.727	-0.008	-2.619
EXP	0.047	31.012	0.061	47.782	0.039	18.926	0.051	29.825	0.037	45.202	0.043	64.543
EXPSQ	-0.001	-23.460	-0.001	-29.541	-0.001	-14.608	-0.001	-20.579	0.000	-17.399	0.000	-24.260
R-squared	0.439		0.492		0.338		0.423		0.307		0.421	
Sum squared residual	3887.2		5793.1		4003.4		5556.4		26320.0		33948.1	
F-statistic	720.6		1346.2		380.9		773.4		1471.9		3543.8	
F-statistic (Chow test)	13.6		62.3		8.3		17.2		41.9		42.2	
No. of observations	12,925		19,503		11,184		15,829		49,880		73,048	

Note : (i) all coefficients are significant at 1 per cent level unless indicated otherwise;
(ii) * significant at 5 per cent level.

Table 6. 9: Earnings Equation Estimates, by Residential Location and Gender, 1989-2009.

Variables	1989				1999				2009			
	Rural		Urban		Rural		Urban		Rural		Urban	
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
INTERCEPT	4.759	5.063	4.599	5.046	6.206	6.595	6.109	6.527	7.465	8.072	7.427	7.940
	(125.0)	*(196.2)*	*(142.7)*	*(243.6)*	*(127.9)*	*(210.9)*	*(170.0)*	*(241.7)*	*(304.4)*	*(544.2)*	*(444.7)*	*(585.7)*
NS	-0.260	-0.256	-0.336	-0.272	-0.132	-0.218	-0.246	-0.102*	-0.107	-0.182	-0.277	-0.357
	(-8.1)	*(-11.2)*	*(-9.0)*	*(-9.2)*	*(-3.2)*	*(-5.9)*	*(-4.8)*	*(-1.8)*	*(-2.4)*	*(-5.6)*	*(-6.0)*	*(-7.8)*
SUB-PRIM	-0.208	-0.185	-0.333	-0.228	-0.166	-0.156	-0.267	-0.150	0.026**	-0.062	-0.106	-0.045
	(-7.5)	*(-11.8)*	*(-11.6)*	*(-12.8)*	*(-4.9)*	*(-7.3)*	*(-7.0)*	*(-5.3)*	*(1.1)*	*(-4.6)*	*(-4.9)*	*(-2.7)*
JHS	0.490	0.296	0.533	0.296	0.282	0.249	0.395	0.227	0.277	0.150	0.261	0.169
	(11.2)	*(14.5)*	*(17.1)*	*(20.5)*	*(6.5)*	*(11.9)*	*(12.4)*	*(11.4)*	*(11.4)*	*(12.6)*	*(15.3)*	*(13.9)*
VJHS	0.604	0.293	0.729	0.312	0.376	0.319	0.563	0.291	0.306	0.208	0.400	0.180
	(6.4)	*(7.1)*	*(9.6)*	*(11.7)*	*(3.4)*	*(6.9)*	*(6.8)*	*(7.1)*	*(3.4)*	*(6.0)*	*(9.0)*	*(7.0)*
SHS	0.812	0.590	1.074	0.623	0.698	0.521	0.897	0.598	0.547	0.360	0.714	0.534
	(17.5)	*(25.6)*	*(42.7)*	*(46.4)*	*(15.6)*	*(23.1)*	*(33.8)*	*(33.9)*	*(25.8)*	*(31.3)*	*(47.2)*	*(49.6)*
VSHS	1.077	0.767	1.130	0.619	1.062	0.688	1.007	0.621	0.805	0.428	0.773	0.513
	(36.9)	*(40.6)*	*(49.3)*	*(43.1)*	*(29.9)*	*(29.2)*	*(36.6)*	*(30.7)*	*(31.6)*	*(29.8)*	*(46.5)*	*(43.9)*
DIPI-II	1.307	0.932	1.366	0.866	1.359	1.037	1.277	0.982	0.941	0.778	1.027	0.815
	(14.5)	*(17.3)*	*(26.3)*	*(22.1)*	*(22.0)*	*(21.4)*	*(29.8)*	*(21.2)*	*(40.1)*	*(37.6)*	*(48.9)*	*(33.4)*
DIPIII	1.600	1.185	1.508	0.994	1.294	0.929	1.425	1.034	1.030	0.868	1.187	0.950
	(17.6)	*(25.3)*	*(37.9)*	*(40.9)*	*(16.8)*	*(15.4)*	*(35.3)*	*(31.9)*	*(34.1)*	*(31.0)*	*(59.2)*	*(49.1)*
UNI	1.623	1.271	1.697	1.208	1.293	0.967	1.470	1.155	1.197	0.978	1.342	1.164
	(15.2)	*(26.3)*	*(39.2)*	*(57.5)*	*(19.1)*	*(24.1)*	*(44.3)*	*(47.9)*	*(52.3)*	*(63.8)*	*(87.4)*	*(97.4)*
MARRIED					0.046*	0.053*	0.111	0.090	0.193	0.204	0.195	0.254
					(1.7)	*(2.3)*	*(5.3)*	*(4.9)*	*(13.5)*	*(20.6)*	*(20.1)*	*(30.5)*
HMA10	-0.010	0.013	-0.011	0.000**	0.010**	0.007*	-0.014	-0.008	0.004**	-0.008	0.003**	-0.012
	(-2.0)	*(4.1)*	*(-3.2)*	*(-0.1)*	*(1.4)*	*(1.7)*	*(-3.0)*	*(-2.5)*	*(1.1)*	*(-3.3)*	*(1.5)*	*(-6.3)*
HMB10	0.035	0.030	0.013*	0.001**	0.021*	0.012*	-0.004**	-0.011*	0.022	0.005**	-0.003**	-0.010
	(4.0)	*(5.9)*	*(1.8)*	*(0.2)*	*(1.6)*	*(1.6)*	*(-0.4)*	*(-1.7)*	*(3.0)*	*(1.3)*	*(-0.6)*	*(-2.7)*
EXP	0.049	0.050	0.062	0.066	0.042	0.039	0.053	0.053	0.055	0.028	0.053	0.037
	(17.3)	*(27.3)*	*(25.5)*	*(44.2)*	*(11.5)*	*(15.3)*	*(18.5)*	*(24.5)*	*(35.8)*	*(30.1)*	*(48.7)*	*(44.1)*
EXPSQ	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	0.000	-0.001	0.000
	(-13.7)	*(-20.7)*	*(-16.1)*	*(-29.0)*	*(-8.8)*	*(-12.1)*	*(-11.9)*	*(-17.9)*	*(-15.1)*	*(-10.4)*	*(-18.2)*	*(-16.2)*
R-Squared	0.434	0.373	0.56	0.410	0.399	0.275	0.502	.350	0.378	0.266	0.478	0.369
Sum Squared Residual	1346.1	2481.9	1847.6	3684	1318.9	2637.7	1836.8	3623.9	9268.5	16702.8	12801.2	20836.4
F-Statistic	237.9	405	547.1	743.5	159.7	210.5	375	407.3	675.7	888.8	1759.5	1926.6
No. of Observations	4056	8869	5593	13910	3380	7804	5219	10610	15607	34273	26910	46138

Note: (i) figures in parentheses are t-statistics; (ii) all coefficients are statistically significant at the 1 per cent level unless indicated otherwise; (iii)* significant at 5 per cent level; (iv) ** not statistically significant.

The central focus of this analysis is on returns to education and how they have differed between urban male and female workers compared to rural male and female workers. The subject of this thesis concerns whether there are differences in returns to education between rural females and urban females as well as between rural males and urban males. Returns to education were calculated from the highest educational attainment (junior high school, senior high school, diploma and university degrees). Where primary education acts as control variable. The estimation results showed high returns to university education for female workers in both urban and rural areas. The results also showed that the rate of return to university education was higher than other levels of education for males and females.

The returns to education have been estimated separately for different genders in urban and rural workers. The results show that there are differences in returns to education between males and females in rural areas. The effect of education on earnings is larger for females living in rural areas throughout the study period. For example, in 1989 females in rural areas earned more; female junior high school graduates earned 49 per cent more compared to males, whose earnings were almost half that of females with the same level of education. In 2009, these differences in returns to education also appear at university level where females in rural areas earned 21.9 per cent more than males living in the same type of area. Similarly in 1999, females in urban groups experience a stronger effect of level of education. The effect of an additional year of schooling on hourly wages for female workers is estimated at 39.5 per cent for junior high school and 147 per cent for university degree relative to individuals with no primary education. These results are higher than the effect of education for the urban male groups, which range from 22.7 per cent for junior high school to 119.7 per cent for university degree. The result provides

evidence that the effect of education on earnings is larger for females than for males in urban and rural groups.

There are several possible reasons for this evidence. The first is the scarcity of female skilled labour in urban and rural areas. This is due to the traditional mind-set that it is not important for females to have higher-level education. However, since the 1980s, many females have continued their education up to university level. Therefore, during the period 1989-2009, there were more educated females in the labour market. Secondly, many employment opportunities have been made available to women and they have equal rights to participate in the paid labour market. In addition, the Indonesian government encourages and gives opportunities to the entire female labour force to participate in all sectors. Finally, there has been an increasing demand for female skilled labour. Since the 1980s, women' participation in the paid labour market has increased significantly, a trend caused by the advance of technology and the fact that there are fewer children in families. Not surprisingly, those workers with higher education will earn more than those with lower education. The returns for males and females within urban and rural groups differed among those who had completed junior high school.

The results shown in Table 6.9 provide further evidence that females in rural and urban areas experience increased earnings as their educational level increased. This finding also appears in male rural and urban groups. The effects of successive levels of formal education vary between females in rural and urban groups and for males in rural and urban groups. During the period 1989-1999, a rural female group with more than 12 years of schooling has a stronger effect on earnings. In 2009, however, the urban female groups earns more than the rural female group, while the figure for male urban workers is higher than that for male rural workers in 2009 except for those with vocational junior

high school education. However, in 1989 the result is reversed: male rural workers benefit from the effect of education except for senior high school diploma holders.

The presence of two types of household members appears to be a factor in determining the level of earnings. Having household members aged over ten showed a negative impact on male workers in 1999 and 2009, while having household members under ten also affected female workers in 1999 and 2009. The variables of male and married appear to have a positive effect on workers' earnings in urban and rural areas. The result shows that male workers in rural areas receive higher earnings than male workers in urban areas.

As expected, work experience has a positive effect on earnings for both males and females during the period 1989-2009. The results reveal that work experience has a greater effect on males' earnings than on females' earnings. Interestingly, in 2009 the results are reversed as female workers with working experience earn more than male workers. This finding indicates that females in both rural and urban areas increasingly earn more as their working experience increases possibly due to market demand. This suggests that females' work experience is needed in the market in order to achieve equality in the job market. In addition, the result suggests that there is a shortage of females with working experience in the market.

The married variable was included in the model with the hypothesis that married individuals are more mature, stable and less likely to quit their jobs than unmarried workers and are therefore likely to earn higher wages. It is common in Indonesia for married male workers to be heads of households, who take responsibility for the family, including financial matters. Workers with more financial responsibilities are arguably more willing to work hard and take unpleasant jobs in order to earn more. Therefore, it is not surprising that married male workers earn more than married female workers in both rural and urban groups. Unlike

the findings for 2009, in 1999 married females in urban areas showed a stronger effect on earnings.

6.7 Conclusion

The general description of distribution in educational levels amongst male and female workers in Indonesia varies. According to the level of schooling, the data showed that a significant proportion of both genders received primary school and other diploma-level education. Although no gap was found between male and female educational attainment at the higher level of education, there is a tendency for female workers to attain higher educational levels than the male workforce.

Further analysis of differences in returns to education suggested that the rate of return to a college/university degree for both males and females remains higher compared to other levels of education. Interestingly, the trend within the last ten years indicates that more Indonesian females have gained access to university education. Further, with the higher education obtained by female workers, this factor has had a positive effect on earnings.

The high returns on tertiary education were also seen for male and female workers in both urban and rural areas. In particular, female workers in urban and rural areas have higher returns to education compared to their male counterparts. Both urban and rural areas seem promising environments for female workers to gain higher returns because these workers are able to fill the job market's demand for more highly educated employees. Unfortunately, although returns are expected to be higher as working experience increases, female workers' entitlement to returns has not been as frequent as that for male workers in the country.

CHAPTER 7

REGION, WAGES AND EDUCATION

7.1 Introduction

Indonesia is a country of about 17,000 islands (Choy, 1999 and BPS, 2010). The major islands are Sumatera, Kalimantan, Sulawesi and Java. The lack of transportation between islands tends to produce large disparities among the regions. The tyranny of distance created by the water separating these islands adds many complexities for the people and government of Indonesia (Phillips, 2005). Regional development as measured by the availability of social and economic facilities and infrastructure differs markedly from one region to another. Java region is relatively well developed compared to other regions, which have very limited infrastructure in terms of roads, bridges, ports, electricity and telecommunications (Choy, 1999). This condition has existed since colonial times. The Dutch East Indies government established a centralized form of government in Jakarta and developed infrastructure such as railways, highways, ports, and higher education institutions on the island of Java. After Indonesia gained its independence, the development of the island of Java was much more advanced than other regions. This is not surprising given that many residents from other areas flocked to the island of Java, especially to Jakarta. Java Island dominates the country's economic activities, with Sumatera in second place. These two islands produce about 80 per cent of Indonesia's GDP (see Table 7.2) and contain 78 per cent of the total Indonesian population (BPS, 2011).

Given the great differences in terms of economy and population, the island of Java, the smallest of the five major islands of Indonesia, controls 50 per cent of

Indonesia's economy. Against this background, it is important to analyze and discuss the regional rate of return to education. To address this, this chapter will focus on regional rates of return to education in Indonesia. Household characteristics, experience, and interaction variables between gender and level of education are also included in the equation.

This chapter presents the empirical results on the regional rates of return in Indonesia and how these differentials change over the study period. The estimates for the earnings equation in this study used three different years of Indonesian National Labour Survey data from 1989, 1999 and 2009. The chapter begins with a classification of Indonesian territories followed by a brief overview of each region. From this, we will gain a picture of the natural resources, human resources and types of economy of these regions. The descriptive statistics on the Indonesian population, percentages of regional GDP, and regional human development index and educational attainment in each region are presented. The next section presents the estimations of earnings equations using OLS regressions for each study period: 1989, 1999 and 2009. The regression analysis will enable us to identify the variables responsible for income determination for each region.

7.2 The Importance of Region

Indonesia is archipelagic in geography, eclectic in civilisation and heterogeneous in culture (Choy, 1999). It features extraordinary diversity in its economy, ecology, demography, culture and history across the regions. It comprises over 300 ethnic groups and even more languages (Ihromi, 1994; Wanandi, 2002; Forshee, 2006). Because of the diversity based ethnicity, culture, social and economic aspects across the regions, Indonesia’s national motto is *Bhinneka Tunggal Eka* means ‘Unity in Diversity’ to describe the flexibility of the Indonesian people to syncretise and to blend the various

religious beliefs, traditions and cultures (Choy, 1999). Therefore, it is impossible to ignore the large differences in economic structure and growth between various regions of the country. To understand the gender earnings differential and discrimination in Indonesia, it is necessary to assess the country's regions.

Indonesia has been a highly centralised state for most of its history. It inherited a centralised structure of government from the colonial Dutch era until the end of the 20th century (Strauss, 2004). The national government in Jakarta is responsible for all manner of matters, from international relations down to the appointment of sub-district heads and the determination of what should be taught in primary school classrooms across the country. With the end of the new order era or after the fall of the long-serving President Suharto in 1998, moves were made to decentralise authority to the regions, by giving them more local control over their own affairs.

In 1999, the Regional Autonomy Laws (Law Nos. 22 and 25) on intergovernmental fiscal relationships have been enacted and they brought a great deal of hope to the regions of Indonesia (Wanandi, 2002). The highly centralised government of the New Order, which kept tight control over the use of resources in the various regions of Indonesia as well as political and economic developments of various kinds, was increasingly seen as exerting a stranglehold on the lives of the Indonesian people, especially outside Java (Erb and Sulistiyanto, 2005).Under the Law No. 22/1999, the central government has delegated most of its discretionary powers, except on justice, monetary law, defence and religious affairs, to district governments, while Law 25 concerns financial administration (Strauss, 2004).

The topic of regional earnings disparities and discrimination is principally important because of the persistence of extraordinary diversity. For example, the per capita regional product of rich province in Kalimantan region (East Kalimantan province)

was more than ten times that of the poor province in Lesser Sunda Islands region (East Nusa Tenggara province). The regional issue is important for a number of other reasons (Hill, 1996). One is political, and ethnicity, no issue is politically more sensitive in Indonesia than the inviolability of the nation state. The second reason the region is particularly important in contemporary Indonesia has to do with spatial dynamics. The regional problem has been seen primary as one of the extreme imbalances between Java with about 57 percent of the nation's population crowded onto a little over 6 percent of its land area, and the rest of the country (see table 9.1).

As a developing country, Indonesia not only has spatial distribution in population but also in earnings. According to Pirmana (2006), the regional earnings differentials are considerably significant among provinces and islands. Using SAKERNAS data from 1996 to 2004, he found that the nominal earnings of all provinces were quite significant from the period before financial crisis in 1998 to the period after the crisis. This increase resulted from increases in inflation rate and the consumer price index caused by the economic crisis and the reflection of the increasing in cost of living. Therefore, regional minimum wage variations were large for each region and the regional price even for basic goods such as rice are different in each region. The gender earnings disparities among regions in Indonesia are due to various constraints, both geographical and potential natural resources that belong to each region are not the same.

7.3 Territorial Differences across Region

Traditionally, Java and the Outer Islands of Indonesia are different in terms of range of demographic, economic and ecological factors. Java, which contains 57 percent of the population and 6.7 per cent of the land area, is characterised by a range of problems associated with levels of population density. On the other hand, Kalimantan and Papua

regions comprise 50 percent of the Indonesian land area and are inhabited by only 7.3 per cent of the population (see table 7.1). The large population in Java requires a lot of natural resources including food, clothing, land, housing, and adequate educational facilities. Conversely, there are abundant natural resources outside Java where the population is very small. Regional differences are also evident in the distribution of poverty, as two thirds of the country's poorest people are located in the east of the archipelago and one third in Sumatera region. The richest of the provincial populations are located in Java, Sumatera, Kalimantan, Sulawesi and the Maluku Islands (Brown, 2009).

Table 7. 1: Mainland Area and Population by Region

Region	Land Area (km^2)	Percentage to Indonesia	Numbers of Islands	Numbers of Population	Percentage to Indonesia
Sumatera	480,793	25.16	5,277	50,615,957	21.31
Java	129,438	6.77	1,086	136,563,142	57.49
Lesser Sunda Islands	73,070	3.82	2,141	13,067,599	5.5
Kalimantan	544,150	28.48	1,061	13,772,543	5.8
Sulawesi	188,522	9.87	2,205	17,359,398	7.31
Maluku	78,896	4.13	2,896	2,566,880	1.08
Papua	416,060	21.78	2,543	3,612,854	1.52
Indonesia	1,910,929	100	17,209	237,558,373	100

Source: BPS (2012)

Most of the natural resources of Indonesia are to be found outside the island of Java or the known Outer Islands. Petroleum, natural gas and copper are among the most important natural resources. Since the Second World War, petroleum has been the most important export of Indonesia, and by the 1970s petroleum and gas together were producing about two out of every three dollars that Indonesia earned internationally. Therefore, since 1970, Indonesia has recorded rapid development in schools due to the high oil prices at that time. In addition to oil and gas, the Outer Islands also have other

mineral resources such as coal, tin, nickel and copper among the provinces. Papua is one of the world's biggest copper mining areas, managed by Freeport McMoRan (Aritonang and Steenbrink, 2008). Other regions, East Kalimantan and Riau province in Sumatera produces oil and natural gas. There are many nickel and gold deposits in Sulawesi and bauxite in northern Sumatera (Brown, 2009).

In the manufacturing sector, the Java region tends to be more industry-oriented such as textiles, clothing, cigarettes, shoes, electronics, plastic and chemical industry, which are aimed at the local market. There is little manufacturing activity in the Lesser Sunda Islands and Maluku, as the raw materials needed in the production process are not available in these regions. Meanwhile, on the agricultural side, the majority of Java region produces subsistence crops such as rice, sugar, coffee and rubber. Meanwhile, outside the island of Java, Sumatera produces estate crops especially rubber, palm oil, coffee and tea, while Kalimantan and Sumatera are also major producers of hardwoods (Brown, 2009).

7.4 Overview and Descriptive Statistics of the Indonesian Regions

Indonesia is an archipelagic state stretching from the western province of Aceh to Papua province in the east. Various regional languages, ethnic groups and cultures are found in the various regions in Indonesia. These types of differences result in Indonesia’s regions being quite different from one another (Phillips, 2005). Moreover, there are significant differences among the populations and natural resources in the regions of Indonesia.

Administratively, Indonesia consisted of 27 provinces in 1996, a figure reduced to 26 in 1999 after East Timor gained independence[21]. Since 1999, after the reformation and decentralization era, there have been seven new provinces expanded from some of the original provinces. They are as follows: North Maluku, separated from Maluku province, and becoming the 27th province of Indonesia on October 4, 1999; Banten, separated from West Java province, and becoming the 28th province of Indonesia on October 17, 2000; Bangka Belitung Islands, becoming the 29th province of Indonesia on December 4, 2000; Gorontalo, separated from North Sulawesi province, becoming the 30th province of Indonesia on December 22, 2000; West Irian Jaya, separated from the province of Papua, becoming Indonesia's 31st province on November 21, 2001; the Riau Islands, separated from the Riau province of Indonesia, becoming the 32nd on October 25, 2002; and West Sulawesi, separated from South Sulawesi province, becoming the 33rd province of Indonesia on October 5, 2004. Currently, Indonesia consists of 33 provinces, five of which hold special status as special areas; they are Aceh, Jakarta, Papua, West Papua and Yogyakarta. Jakarta, formerly Batavia, is the capital and largest city of Indonesia and is officially known as the Special Capital Territory of Jakarta. Jakarta is the only city in Indonesia to enjoy province-level status. Aceh is privileged with special authority to conduct its own religious life, customs and education, with scholars playing a role in the determination of regional policy. The special region of Yogyakarta on the island of Java is the only province in Indonesia still governed by a pre-colonial monarchy, the Sultan of Yogyakarta, who serves as the hereditary governor of the province. The provinces of Papua and West Papua were given special autonomy within the framework of the Republic of Indonesia. Special autonomy itself is a special authority

[21] 1999 brought the referendum in East Timor, which saw 78 per cent of the population choosing to reject membership of the Indonesian nation and state (Brown, 2003).

acknowledged and granted to the province of Papua to regulate and manage the interests of society on its own initiative based on the aspirations and basic rights of the people of Papua.

Aside from the classification by province, Indonesia can also be classified into 7 territories: Sumatera, Java, Lesser Sunda Islands, Kalimantan, Sulawesi, Maluku Islands and Western Papua. Economic distributions and activities differ from one territory to another. Java Island, for example, comprises 6.9 per cent of the total Indonesian territory, but it is occupied by around 57 per cent of the Indonesia population (BPS, 2011). Since the largest portion of the Indonesian population is located in Java region, most of the economic activities also take place in this region.

Due to differences in population and levels of poverty among regions, the Suharto regime started a transmigration program in the 1970s (Diana, 2008). Transmigration in Indonesia is usually organized and funded by the government for citizens who are generally lower middle-class. Arriving at the place of transmigration, the transmigrants will be given a piece of land, a modest house and other devices to sustain life at the new location of residence. This program aims to reduce the poverty and population density of Java via dispersal to other regions such as Kalimantan, Papua and Sumatera (Vickers, 2005). Despite discord between locals and transmigrants, the data in table 7.2 indicate that the transmigration program succeeded in reducing the population density of Java region from 62 per cent in 1980 to 57 per cent in 2010. Conversely, at the same time, six other regions in Indonesia gradually increased in population.

The transmigration program sometimes works well; occasionally, however, it creates conflicts between migrants from Java and local communities. The Sampit conflict was an outbreak of inter-ethnic riots in Indonesia in 2001. This conflict began in the town of Sampit, Central Kalimantan, and extended to the whole province, including the capital, Palangkaraya. This conflict was between indigenous Dayak and Madurese migrants from

the island of Madura, East Java. In 2000, migrants formed 21 per cent of the population of Central Kalimantan. The Dayak were not satisfied with the situation in which the new laws had allowed residents of Madura to gain control over many of the commercial industries in the province, such as timber, mining and plantations. The Sampit conflict resulted in more than 500 deaths and homelessness for more than 100,000 Madura residents.

Besides differences in population and poverty, there are also economic differences between the regions. Economically speaking, before the introduction of regional autonomy in 1999, all policies and economic activities, ranging from investment, infrastructure development, educational centres, and industry, were based in Jakarta and surrounding areas in Java (Vickers, 2005). The result was a difference in the distribution of income and development between central and local governments. These differences persisted for many years, causing disparities between one region and another. To solve this problem, the government established a policy called regional autonomy. Regional autonomy can be interpreted as a right, authority, and obligation of the autonomous regions to organize and manage their own affairs and the interests of local communities in accordance with statutory regulations. However, this policy is still unable to reduce these inequalities, which are still visible in the different levels of development, among others, such as differences in levels of income per capita, poverty and infrastructure in all areas.

Regional autonomy policy in Indonesia was implemented in 1999 with the imposition of a new decentralization law to replace Law No. 5/1974, as the government enacted Law No. 22 of 1999 on regional governance and Law No. 25 of 1999 on Fiscal Balance between Central and Local Government (Rabasa and Chalk, 2001). The basic point of regional autonomy in Law Number 22/1999 concerns the transfer of all central government authority, except foreign policy, defence, the judiciary, monetary and fiscal policy, and religious policy, to the regional government.

Figure 7. 1: Map of Indonesia by Region

Source: MoMT (2013)

Figure 7.1 shows a map of Indonesia by region, with the island of Sumatera consisting of 10 provinces. Sumatera is the largest island in Indonesia, while the next two largest islands of Borneo and Papua are shared areas with Malaysia and Papua New Guinea. In general, the island of Sumatera is inhabited by Malays, who are divided into several tribes. The major tribes are the Acehnese, Batak, Malay and Minangkabau. The island of Sumatera is rich in natural resources, and two of the five richest provinces in Indonesia are located in Sumatera, i.e. the provinces of Aceh and Riau. The natural resources of this island include palm oil, tobacco, petroleum, tin, bauxite, coal and natural gas.

The islands of Java and Madura are the most densely populated regions in Indonesia, with a population density of about 1,029 persons/km^2. Java has a population of 136 million, or 57 per cent of the total population of Indonesia (Choy, 1999). This not surprising since the capital city of Indonesia, Jakarta, is located in the west of this island. Java has become the most developed region in Indonesia since the era of the Netherlands East Indies gave way to the modern Republic of Indonesia. Furthermore, although regional autonomy was implemented in 1999, the administration of the Indonesian government is still centralized wholly in Jakarta.

Despite the transmigration programme launched by the government in the 1970s, table 7.2 illustrates that great inequalities in the population distribution still exist in Indonesia, and these are caused by several factors. First, the culture of communities differs across the region. In the Java community, for instance, the cheap cost of marriage encourages people to marry younger and they tend to have more children. Meanwhile, the cost of marriage in some parts of Sumatera region are high, including a dowry of up 100 grams of pure gold to be given by the groom to the bride, and an expensive wedding party to which many guests are traditionally invited. Second, the family planning

program was quite successful outside the island of Java. Lastly, the major cities of Indonesia are located in Java, such as Jakarta, Bandung, Yogyakarta, Semarang and Surabaya, and these cities have became centres of economic growth, tourism and education. Therefore, people have understandably flocked to Java from all over Indonesia in search of better jobs and lives.

Table 7. 2: Percentages of Indonesian Population by Region (1980-2010)

Island Group	1980	%	1990	%	2000	%	2010	%
Sumatera	28,018,140	19.07	36,508,693	20.44	44,351,914	21.25	50,615,957	21.31
Java	91,269,528	62.11	107,581,306	60.22	121,352,608	58.14	136,563,142	57.49
Lesser Sunda Islands	7,931,760	5.4	9,416,104	5.27	11,112,702	5.32	13,067,599	5.5
Kalimantan	6,723,086	4.58	9,099,874	5.09	11,331,558	5.43	13,772,543	5.8
Sulawesi	10,409,533	7.08	12,520,711	7.01	15,838,106	7.59	17,359,398	7.31
Maluku	1,411,006	0.96	1,857,790	1.04	1,990,598	0.95	2,566,880	1.08
Papua	1,173,875	0.8	1,648,708	0.92	2,750,623	1.32	3,612,854	1.52
Indonesia	146,936,928	100	178,633,186	100	208,728,109	100	237,558,373	100

Source: BPS, (2011)

The Lesser Sunda Islands are a cluster of islands stretching from Bali in the west to the island of Timor in the east. Administratively, the Lesser Sunda Islands are all included within the territory of Indonesia, except the eastern part of Timor Island, which includes the territory of Timor Leste. These islands consist of three provinces: Bali and West Nusa Tenggara, which are at the centre of the tourism industry (Thomasson, 2010), and East Nusa Tenggara.

Kalimantan Island, commonly known as Borneo Island, is the world's third largest island and is located to the north of Java and to the west of the island of Sulawesi. Borneo Island is divided into the territories of Brunei, Indonesia (two thirds) and Malaysia (one third). The population density of this island is less than 10 persons per km^2, or only 5.8 per cent of the total Indonesian population. This region, especially East Kalimantan, is one of the richest provinces in Indonesia. East Kalimantan's economy is highly dependent on natural resources such as oilfield exploration, natural gas, and coal and gold mining.

It is not surprising that the growth rate of East Kalimantan's population is very high. Among other natural resources located in this region are oil, gas, forests, and mining.

The region of Sulawesi lies between the island of Borneo and the Maluku Islands. Sulawesi is the fourth largest island in Indonesia (Druce, 2009) after Papua, Kalimantan and Sumatera, with a land area of 174,600 square kilometres. According to the 2010 census, the population of the provinces of Sulawesi was 17,365,370, around 7.31 per cent of Indonesia's total population. The island is subdivided into six provinces: Gorontalo, West Sulawesi, South Sulawesi, Central Sulawesi, Southeast Sulawesi, and North Sulawesi. Gorontalo and West Sulawesi are new provinces, established in 2000 and 2004 from parts of North and South Sulawesi respectively. The largest cities on the island are Makassar, Manado, Palu and Kendari.

The next region is the Maluku islands, internationally known as the Moluccas, one of oldest provinces in Indonesia. Its capital is Ambon. In 1999, some areas of Maluku province became North Maluku province, with its capital in Sofifi. Maluku province consists of islands known as the Maluku Islands. Most of the islands are mountainous, some with active volcanoes. This island produces sago, rice and spices such as nutmeg, cloves and mace, among others. Cloves and nutmeg are still cultivated, while cocoa, coffee, fruit and fishing are big industries across the islands.

Finally, West Papua or Western New Guinea informally refers to the Indonesian western half of the island of New Guinea and other smaller islands to its west. The region is officially administered as two provinces: Papua and West Papua. The eastern half of New Guinea is Papua New Guinea. Following the 1998 commencement of reforms across Indonesia, Papua and other Indonesian provinces received greater regional autonomy. In 2001, "Special Autonomy" status was granted to West Papua although, to date, implementation has been only partial. Since 2003, the region has been divided into

the two provinces of Papua and West Papua. This region is rich in copper and silver mining, and Freeport Indonesia Limited operates here (Rabasa and Chalk, 2001).

Regional differentials prevail in the Indonesian labour market, and Table 7.3 shows that some regions usually attract comparatively higher pay than other regions. For instance, Java dominates Indonesia's economic activity with Sumatera in second place. The two islands produce about 80 per cent of Indonesia's GDP. There was no significant change in regional GDP between 2004 and 2009. However, Papua increased its share of Indonesia's GDP from 1.4 per cent to 2 per cent, while Java's share fell slightly from 59 per cent in 2004 to 58 per cent in 2009.

Table 7. 3: Distribution of Gross Regional Domestic Product at Current Market Prices by Regions (2004-2009)

Region	2004	2006	2007	2009
Sumatera	22.42	22.28	22.86	22.65
Java	59.33	59.47	58.84	58.58
Lesser Sunda Islands	2.9	2.66	2.69	2.73
Kalimantan	9.5	9.51	9.41	9.2
Sulawesi	4.15	4.03	4.1	4.56
Maluku	0.29	0.25	0.25	0.25
Papua	1.42	1.79	1.86	2.04
Indonesia	100	100	100	100

Source: BPS, (2011)

Several factors contribute to regional rates of return across regions. They can be classified into four groups: demographic factors including age and ethnicity; human capital variables including education, training and experience; job characteristics such as full-time and part-time; and main industries.

In terms of population, Indonesia is still facing some major problems. They include the following: 1) the population distribution is unequal - it is very dense in Java and very sparse in Kalimantan and Papua; 2) the composition of the Indonesian population by age shows that the age group of 0-14 years has the biggest percentage; 3) the labour force is large compared to the availability of employment; 4) the distribution

of economic activity is still unequal, as it is still concentrated in Jakarta and the major cities of Java island; 5) infrastructure development is still lagging behind and has yet to receive serious attention especially beyond Java region; and finally 6) health indices are still low, and maternal mortality rates and infant mortality remain high.

The second factor contributing to regional rates of return is the fact that human capital development and educational institutions are still concentrated in Java region. As an indicator of human development, the United Nations Development Programme (UNDP) has developed a Human Development Index (HDI) which includes three basic components that can reflect the efforts of human development in a region, namely: 1) chances of survival as measured by average life expectancy; 2) access to knowledge as measured by percentage of adult literacy and school participation rates obtained from the ratio of the combined school enrolment from primary school to high school; 3) standard of living as measured by income per capita in purchasing power parity. Table 7.3 shows that Indonesian HDI is higher in the western part of the country. These data indicate that average life expectancy, access to knowledge and standard of living are still higher in the western part of Indonesia.

Table 7. 4: Human Development Index (HDI) by Province, 1999-2009

Region	1999		2009	
	HDI	Ranking	HDI	Ranking
Sumatera	65.3	11.4	73	11
Java	66.44	10.8	72.9	13
Lesser Sunda Islands	60.1	20	67.6	26
Kalimantan	64.3	14	71.9	17
Sulawesi	64.10	16	70.97	20
Maluku	67.2	5	105.3	34
Papua	58.8	25	66.6	31.5
National	64.3		71.76	

Source: BPS, (2011)

Table 7.5 shows the educational attainment by region in Indonesia. It is found that the educational attainment was still concentrated at the secondary level from 1999 to 2009. The data also illustrate the variation in educational attainment among regions in Indonesia. There is no significant difference in educational attainment between western and eastern parts of Indonesia. In general, university educational attainment increases gradually from 1999 to 2009. Conversely, primary educational attainment decreased in all regions. This reflects the fact that the educational attainment of the Indonesian labour force shifted from primary school level to university level. These results indicate a positive direction in the Indonesian labour force's educational attainment. Several factors might explain this indicator. First, the Indonesian government re-imposed the 9-year compulsory basic education in the amendment of Law No. 2, 1989, to Law 20, 2003. Second, since 2005, the government of Indonesia has allocated the BOS (*Bantuan Operasional Sekolah* or School Operational Assistance) program. It has been disbursing block grants to schools across the country. BOS is part of the Government's efforts to provide high-quality education to students of all income levels.

Table 7. 5: School Attainment by Region, 1999-2009.

Region	1999									
	NOSCH	SUB-PR	PRIM	JHS	VJHS	SHS	VSHS	DIP.I-II	DIP.III	UNI
Sumatera	1.15	7.93	23.13	14.32	2.11	21.91	15.54	2.68	4.09	7.14
Java	2.64	8.52	28.14	14.13	1.66	20.27	12.23	1.78	3.78	6.87
Lesser Sunda Islands	5.79	12.51	29.44	13.10	1.63	15.29	12.30	2.35	2.33	5.26
Kalimantan	2.88	8.65	18.90	13.04	2.13	23.65	17.97	3.55	2.31	6.92
Sulawesi	0.85	5.86	15.38	12.51	1.28	28.98	16.78	4.58	4.03	9.76
Maluku	1.18	3.14	10.00	10.78	2.35	30.59	20.39	3.73	5.10	12.75
Papua	1.43	1.43	10.89	11.46	2.87	34.38	26.07	1.15	3.72	6.59
						2009				
Sumatera	0.85	9.06	15.16	14.25	1.33	23.22	12.42	5.43	4.61	12.93
Java	1.05	5.95	18.51	16.91	1.42	20.07	15.37	2.96	3.66	12.81
Lesser Sunda Islands	1.62	6.34	10.91	10.71	0.84	26.78	14.28	6.78	4.57	16.19
Kalimantan	1.35	10.16	16.45	15.06	1.25	23.47	11.87	5.31	3.64	10.71
Sulawesi	1.10	8.59	12.16	11.59	1.00	24.94	11.60	6.51	3.89	17.38
Maluku	0.52	4.55	7.69	8.68	0.90	33.29	11.43	9.32	3.82	18.47
Papua	1.15	5.45	7.94	13.04	1.34	29.58	16.70	4.30	4.59	15.17

Source: BPS (999, 2009)

Furthermore, Table 7.5 indicates that Lesser Sunda Islands residents account for the highest percentage with no schooling. Conversely, residents of Maluku region had the highest university educational attainment in 1999 and 2009 at 12.75 per cent and 18.47 per cent respectively. The data demonstrate that the eastern part of Indonesia seems to have a higher university educational attainment while the western part has a higher primary school educational attainment.

Indonesia is a country rich in natural resources; nevertheless, 32.530 million of the population are poor (Statistics Indonesia, 2009). The poor population consists of 11.911 million in urban areas and 20.619 million people in rural areas. This figure is much lower than the figures recorded in 1999 when there were 15.64 million poor people in urban areas and 32.33 million poor people in rural areas. To measure poverty, Statistics Indonesia uses the concept of ability to meet basic needs (the basic needs approach). With this approach, poverty is viewed as the inability of the economy to meet the basic food and non-food needs as measured from the expenditure side. Therefore, the Poor is a population with an average per capita monthly expenditure below the poverty line. The poverty line is always adjusted to price changes, especially those associated with food commodities. In 2009, for example, the value was Rp200.262 per capita per month.

Although Papua region and other regions in the eastern part of Indonesia have a higher return to education compared to Java region, Papua and some other regions have a higher percentage of poor people. There are several possible reasons for this. For example, the eastern part of Indonesia, including Papua, is still far away from the centre of economic activity; it also lacks basic infrastructure, and all the natural resources that are produced in Papua are brought to Jakarta as the central government takes control of

every policy decision. The higher return in Papua comes mainly from the natural resources of that region such as mining and forestry, which do not belong to the people of these regions; in fact, this higher return refers to the incomes of individuals who come to work in Papua.

7.5 Regional Estimates of Earnings Function

This section will discuss the regional estimates of earnings function for each region by year during 1989, 1999 and 2009. The model and specification that will be used in this section in order to examine the regional rate of return to education is specification in equation (7.2). They are seven region representing all provinces in Indonesia are incorporated in equation (7.2). These region to be estimated are Sumatera, Lesser Sunda Islands, Kalimantan (Borneo), Sulawesi (Celebes), Maluku (Moluccas), and Papua. Unlike 1999 and 2009 sample data, married dummy is not available in 1989 sample data. Separate earnings equations will be regressed using Ordinary Least Square for the entire sample for each region. Based on general equation (6.1),

$$LnW_{ij} = \beta_{ij} X_{ij} + \varepsilon_{ij}, \tag{7.1}$$

The estimating equations can be written as :

$$\begin{aligned} LnW = {} & \beta_0 + \beta_1 NS + \beta_2 SUB - PRIM + \beta_3 JHS + \beta_4 VJHS + \beta_5 SHS \\ & + \beta_6 VSHS + \beta_7 DIPI - II + \beta_8 DIPIII + \beta_9 UNI + \beta_{10} URBAN + \beta_{11} MARRIED \\ & + \beta_{12} HMA10 + \beta_{13} HMB10 + \beta_{14} EXP + \beta_{15} EXPSQ + \beta_{16} MIN + \beta_{17} MAN \\ & + \beta_{18} UTIL + \beta_{19} CONS + \beta_{20} TRADE + \beta 2_{21} FINC + \beta_{22} SERV + \varepsilon \end{aligned} \tag{7.2}$$

where The variables are including in this estimation presented in the following table:

Table 7. 6: Number of Estimated Variables in Wage Equation, 1989, 1999 and 2009.

Variables	Description
LnW	Natural logarithm of hourly wages
Education dummy (primary school = control)	
NS	= 1 if no schooling; = 0, otherwise
SUB-PRIM	= 1 if sub-primary school; = 0, otherwise
JHS	= 1 if a person has junior high school certificate; =0, otherwise
VJHS	= 1 if a person has vocational junior high school certificate; 0, otherwise
SHS	= 1 if a person has senior high school certificate; = 0, otherwise
VSHS	= 1 if a person has vocational senior high school certificate; =0, otherwise
DIPI-II	= 1 if a person has diploma 1-2; =0, otherwise
DIPIII	= 1 if a person has diploma 3; =0, otherwise
UNI	= 1 if a person has university degree; =0, otherwise
EXP	= Experience (age – years of schooling – 6)
EXP^2	= Experience squared
Socio-Demography	
Married	=1 if married; =0, otherwise
HMA10	=Total number of family members aged over 10 years
HMB10	=Total number of family members aged under 10 years
Industry dummy (Agriculture = control)	
MIN	= Mining and quarrying
MAN	= Manufacturing
UTIL	= Utilities (Electricity, gas and water)
CONS	= Construction
TRADE	= Wholesale, retail trade, restaurant and hotels
FINC	= Financing, insurance, real estate and business services
SERV	= Community, social and personal services

The dependent variable is the natural logarithm of the sum of hourly wages of employees. The first group of the independent variables is classified as human capital variables which include length work experience, and educational attainment. The returns to education have been calculated based on highest level of educational attainment by employees. Among nine level of educational attainment, primary school used as omitted

category. Marital status is equal to one if workers are married. The number of children below and above ten years is included in the estimation to examine the effect of children in the household on employees' earnings.

To examine the effect of industry versus region, the industry dummy variable are included in the estimation. Variables industries are included in the model to reveal the effect on the hourly wage when individual work in certain industry. There are nine category of industry included in the estimation with the agriculture as control industry.

7.5.1 Earnings Equation Estimates in Sumatera

Table 7.7 presents the premium skill of male and female employees in Sumatera region during 1989-2009. The signs of the estimated coefficients with regard to schooling variables are positive. Conversely, the no schooling and sub-primary education variables have a negative sign. This results confirm that education contribute a significant effect on earnings. Table 7.7 shows that the strongest effect of no schooling for female was in 1999,and for male employees was in 2009. The regression results shows that female and male employees with no education earn 18.5 per cent and 21.3 per cent respectively lower than individuals who completed primary education.

Interestingly, female employees earn higher income than male employees at all level of education. In 2009, female workers with junior high school education earn 18.5 percent higher income compare to their counterpart which only at 10.3 per cent. The returns for lower secondary education (9 years' schooling) show a positive effect on earnings for both male and female employees. During 1989-2009 female employees with junior high school education earn higher income than individuals who obtained primary education. For example, in 1999, female and male employees with junior high school

qualification earn 37.4 per cent and 15.7 per cent respectively higher than workers with primary education.

Meanwhile, the rate of return to upper secondary education (12 years of schooling) was approximately two times higher than lower secondary education. This was reflected from the year of 1989 to 2009. For instance, in 1999, female workers earn 89.6 per cent higher income than individuals who completed primary education.

For the case of higher education, female workers with diploma-level education (12-14 years of schooling) and university (16 years of schooling) graduated earn more than 100 per cent wages compared to those with primary school education within 1989 to 1999; and the income showed slightly lower percentage in 2009. Higher percentage of income amongst the higher educated employees was in line with study conducted by Schultz (1960). He asserted that additional years of education significantly increase workers' earnings.

Overall, the trend of skill premium changed in 2009 whereby, in this period, female employees earning tends to decrease in all level of education. This is possibly due to more skilled workers available in the labour market at that time in which if this compared to the last two decades, supply of skilled employees were rather limited.

In addition to human capital characteristics, residential areas are significantly affecting workers' earnings in the period of 1989 and 2009. Possible explanation for this is that individuals who reside in urban areas have more job opportunities compared to those in rural areas. However, female living in urban area received lower income than male workers. It could be assumed that female workers can benefit from living in rural areas during that time.

Further, Behrman and Deolalikar (1995) stated that certain family characteristics may have different effects on individual earnings. To capture this household effect, the

Table 7. 7: Regression Results on Earnings Equation in Sumatera

Variables	1989				1999				2009			
	Female		Male		Female		Male		Female		Male	
	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio
INTERCEPT	4.873	57.606	5.057	91.632	6.094	177.355	6.507	97.282	7.711	262.690	8.170	448.167
NOS	-0.150*	-1.882	-0.065*	-1.207	-0.195	-6.159	-0.002**	-0.018	-0.081**	-1.242	-0.213	-4.446
SUB-PRIM	-0.174	-3.508	-0.136	-5.355	-0.217	-8.753	-0.150	-3.638	-0.094	-3.169	-0.073	-4.388
JHS	0.479	8.653	0.234	10.499	0.374	14.691	0.157	5.003	0.185	6.495	0.103	7.240
VJHS	0.760	7.114	0.256	5.132	0.528	7.951	0.288	4.302	0.329	4.101	0.083	2.481
SHS	0.851	17.211	0.516	23.716	0.896	38.786	0.389	12.414	0.558	22.378	0.321	23.316
VSHS	0.968	21.994	0.557	23.793	1.078	46.980	0.460	12.817	0.675	24.509	0.334	20.785
DIPI-II	1.162	12.824	0.685	11.339	1.363	37.343	0.698	8.910	0.901	30.816	0.659	22.890
DIPIII	1.310	18.431	0.854	19.439	1.443	39.491	0.801	12.769	0.923	30.134	0.681	24.438
UNI	1.245	13.638	1.055	27.672	1.483	48.467	0.788	16.485	1.140	43.228	0.937	51.536
URBAN	-0.076	-2.600	0.065	4.284	0.008**	0.523	0.016**	0.769	0.046	3.336	0.019*	2.148
HMA10	-0.011*	-1.867	0.004**	1.330	-0.006**	-1.576	-0.008**	-1.394	0.005**	1.628	-0.015	-5.616
HMB10	-0.005**	-0.478	-0.002**	-0.330	0.006**	0.775	-0.007**	-0.636	-0.007**	-0.971	-0.018	-3.963
EXP	0.072	17.862	0.056	23.600	0.051	22.834	0.039	10.346	0.055	27.293	0.029	22.154
EXPSQ	-0.001	-13.016	-0.001	-15.851	-0.001	-15.917	-0.001	-7.482	-0.001	-9.892	0.000	-6.801
MARRIED					0.072	4.404	0.111	3.307	0.269	17.999	0.237	21.508
MIN	-0.019**	-0.259	0.153	3.181	0.195	6.144	0.372	6.567	-0.179*	-1.868	0.240	10.667
MAN	-0.086**	-1.188	0.134	2.767	0.076	2.831	0.339	5.518	-0.012**	-0.395	0.034*	2.044
UTIL	-0.024**	-0.273	0.097**	1.626	0.358*	1.764	0.300	2.269	0.246*	1.972	0.378	8.332
CONS	0.018**	0.099	0.512	9.197	0.187	2.996	0.334	5.383	0.028**	0.311	0.066	4.303
TRADE	-0.075**	-0.833	0.073**	1.033	-0.124	-3.873	0.112*	1.726	-0.319	-10.513	-0.172	-9.420
TRANS	0.035**	0.329	0.028**	0.219	0.035**	0.510	0.277	4.407	-0.064**	-1.299	0.041*	2.252
FINC	-0.081**	-0.817	0.232	3.952	0.116	2.103	0.410	4.195	0.006**	0.129	0.139	4.918
SERV	0.051**	0.513	0.183	3.228	-0.031**	-1.179	0.397	6.849	-0.107	-4.572	0.100	7.344
R-squared	0.483		0.405		0.479		0.283		0.466		0.336	
No. of observation	1609		4558		8599		3722		11593		23289	

Note : (i) all coefficient are statistically significant at 1 per cent level unless indicated otherwise; (ii) *significant at 5 per cent level; (iii)**not statistically significant.

presence of family members' variables are added in the regression. Table 7.7 indicates that most of the household members over and below 10 years were not significant in explaining workers' income. However, in 2009, the presence of children amongst male employees slightly reduces labour earnings by 1.5 per cent.

The effect of working experience on earnings is positive and its quadratic square has a standard relationship with earnings; it is exhibiting the non-linear pattern of experience-earnings profile. Table 7.7 also shows that an additional year of working experience increases earnings by 7.2 per cent and 5.6 per cent by 1989 for female and male workers. However, the effect of an additional year of work experience tends to decline over time. This finding is consistent with the literature on estimations in other countries (Harmon et al., 2003).

In regards to marriage variable, the data only available for 1999 and 2009. In this time, it appears that marriage showed positive effect on earnings. The effect of marriage tends to increase earnings for both female and male workers. For example, in 1999, married female employees have slightly lower earnings compared to married male employees.

Table 7.7 indicates that the number of household members over ten years of age has a positive impact on earnings, presumably because such members increase the possible sources of income for the household. The presence of household members above ten years old slightly reduces labour earnings by 1.6 per cent. Gender is another important determinant of wages. The positive sign of male coefficient indicates that male employees received higher earnings than their counterparts. As expected, the variable male was highly significant in explaining earnings differential between male-female employees.

In term of main employment, during 1989-2009, all types of industry show a various effect on female employees. In this estimation, female workers predominantly

have lower earning than their male counterparts. Male employees wage estimation indicates positive effects in all sectors. These workers earn higher income in most industries, but, with exception for trading sector in 2009.

7.5.2 Earnings Equation Estimates in Java

Java is the centre of economic activity in Indonesia. Table 7.8 presents wage estimation for workers in this region. In Java, no-schooling and sub primary education variables showed all negative. Meanwhile, as expected, the contrast estimation were existed amongst workers with lower and upper secondary school education. Female employees who obtained secondary schooling enjoyed approximately two times higher earnings compared to male workers in 1989 to 2009. However, the trend tends to show near similar pattern in each decade of observation. There was not much difference showed in female employees' income with secondary education from 1989 to 2009. Similarly, the wage estimation amongst female workers with diploma I/II and university education is higher than male employees in this region. The pattern from 1989 to 2009, however, tends to show a small decrease on the female wage; with the 2009's estimation as the lowest one. This college earnings premium associated with two factors. First, more schooled individuals have higher rate to enter labour market, or to work longer hours if they are already in the labour force. Second, holding working hours is constant, those with more schooling are paid higher wages (Pencavel, 1991). In general, the estimation results show that education variables are a significant factor in increasing workers' earnings. These results indicate that education variables are in line with studies conducted by Schultz (1960), Mincer (1974), Berhman and Deolalikar (1995) and Psacharopoulos and Patrinos (2004).

Table 7. 8: Regression Results on Earnings Equation in Java

Variables	1989				1999				2009			
	Female		Male		Female		Male		Female		Male	
	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio
INTERCEPT	4.681	123.516	4.744	178.888	6.233	146.788	6.382	209.799	7.289	244.138	7.458	345.197
NOS	-0.255	-9.324	-0.240	-10.988	-0.198	-5.290	-0.158	-4.462	-0.252	-5.847	-0.304	-6.098
SUB-PRIM	-0.259	-11.268	-0.193	-13.048	-0.205	-6.862	-0.158	-7.515	-0.131	-5.649	-0.123	-6.124
JHS	0.475	14.594	0.290	18.103	0.337	10.962	0.198	10.900	0.309	17.384	0.198	14.498
VJHS	0.555	6.225	0.279	9.723	0.413	4.450	0.255	6.457	0.425	8.146	0.189	5.742
SHS	1.095	36.452	0.639	39.927	0.823	26.931	0.531	28.396	0.700	39.343	0.534	40.368
VSHS	1.224	47.444	0.665	40.793	0.943	30.201	0.546	26.559	0.735	36.490	0.498	35.995
DIPI-II	1.528	21.943	0.988	18.154	1.321	26.060	0.977	19.858	0.979	34.722	0.758	24.586
DIPIII	1.708	33.941	1.129	36.846	1.505	29.422	0.987	26.031	1.300	47.801	1.038	40.027
UNI	1.922	34.268	1.365	47.300	1.534	37.078	1.160	40.767	1.441	74.684	1.235	78.471
URBAN	0.048	2.744	0.087	8.249	0.066	3.321	0.071	5.673	0.179	13.389	0.173	18.058
HMA10	-0.014	-3.858	0.005*	2.129	-0.005**	-0.974	0.002**	0.615	-0.005**	-1.437	-0.001**	-0.526
HMB10	0.029	3.715	0.003	0.606	0.000**	-0.044	-0.012	-1.674	-0.009**	-1.219	-0.006**	-1.196
EXP	0.049	21.732	0.057	38.441	0.044	15.723	0.041	19.533	0.045	36.532	0.034	37.098
EXPSQ	-0.001	-15.383	-0.001	-27.191	-0.001	-11.616	-0.001	-15.210	0.000	-14.861	0.000	-15.210
MARRIED					0.017**	0.796	0.065	3.513	0.110	9.099	0.235	21.714
MIN	-0.117	-3.608	0.247	12.323	-0.041**	-0.860	0.074	2.544	0.577	2.674	0.604	12.756
MAN	-0.174	-6.214	0.224	11.011	0.020**	0.672	0.143	6.368	0.100	3.864	0.197	11.334
UTIL	-0.001**	-0.027	0.001**	0.042	0.157**	0.646	0.416	6.067	0.544	4.236	0.699	16.262
CONS	0.004**	0.021	0.437	6.994	0.081**	0.907	0.229	9.830	0.315	3.731	0.268	12.713
TRADE	0.004**	0.090	0.141	4.718	-0.169	-4.372	0.057	2.040	-0.075	-2.556	0.113	5.705
TRANS	0.061*	1.805	0.183	7.193	0.004**	0.042	0.197	6.564	0.094*	2.294	0.235	11.009
FINC	0.042**	0.575	0.203	6.681	0.050**	0.725	0.273	6.293	0.304	7.867	0.332	13.604
SERV	0.034**	0.903	0.243	10.300	-0.150	-4.856	0.186	7.901	-0.100	-3.842	0.152	8.618
R-squared	0.515		0.467		0.443		0.366		0.475		0.403	
No. of observation	5964		12314		4946		9690		16581		26913	

Note : (i) all coefficient are statistically significant at 1 per cent level unless indicated otherwise; (ii) *significant at 5 per cent level; (iii)**not statistically significant.

Further to schooling, the workers residential location may also have affecting their wage estimation rate. Simpson (1987) argued that local employment condition influence workplace location. In Java region, female employees who reside in urban areas earn higher income than those in rural. However, both female and male workers in urban areas, averagely, shared near similar earnings percentage in 1999 and 2009. Earlier in 1999, the variable showed a slight different. Female workers in urban areas received lower income than their male counterpart. This could be that in this particular period, female employees can earn more if they reside in rural areas.

Behrman and Deolalikar (1995) state that certain family characteristics may have different effects on individual earnings. To capture this household effect, the 'presence of family members' variables are added in the regression. The presence of family members who aged above ten, unfortunately, this condition will reduce the female workers income. Meanwhile, this brings opportunity for male employees to obtain higher earnings. Therefore, it could be expected that female workers in Java would have earn higher earnings when their family members aged younger than ten years old.

The effect of working experience on earnings is positive and its quadratic square has a standard relationship with earnings; it is exhibiting the non-linear pattern of experience-earnings profile. Table 7.8 also shows that an additional year of working experience increases earnings by 4.5 per cent for female and 3.4 per cent for male within 2009. However, the effect of an additional year of work experience tends to decline over time. This finding is consistent with the literature on estimations in other countries and reinforces the results (Harmon et al. 2003).

Indonesia's main industry are predominantly located in Java region (Brown, 2009). In all type of industrial sectors, male employees wage equation is positive and statistically significant in explaining earnings premium. It implies that these various type of main employment provide higher earnings for male employees compare to those working in agriculture sector. These alternative earning opportunity might be due

declining earning in agriculture sector. This condition puts these workers earn higher income than female employees. Interestingly, in mining and quarrying industry, female workers income positively raise up in 2009. This is a noticeable different compared to estimation showed in two decades before.

7.5.3 Earnings Equation Estimates in Lesser Sunda Islands

Table 7.9 presents estimate of wage equation for workers' earnings in Lesser Sunda Island (LSI). The trends from the year of 1989, 1999, and 2009 showed that there are consistent results between no schooling and primary-school educated workers within those periods. Both male and female workers wage estimate in the 1989-2009 are lower compared to other level of education. In the lower and higher secondary schools, workers who obtained vocational senior high education (VSHS) are tend to receive higher estimate within the period of 1989 and 1999. However, the coefficient on most of the mid-schools gets lower on 2009. Higher accessibility to higher education starting from the beginning of new millennium could possibly be assumed as the cause for this. People might have been more aware that attending a higher level of education, such as Diploma or University, could increase their income. This can be explained by the LSI's coefficient under higher education groups, such as Diploma I/II or university. It showed an increase of income amongst the male and female workers in 1989-2009 who educated in this part of education. Moreover, the data also show that the average hourly income increases as the level of education increases. This result is similar to previous estimates on earnings functions in Indonesia, which shows that the effect of education on earnings is larger for those with higher levels of education (Berhman and Deolalikar, 1995). A possible explanation for this is the scarcity of skilled labour in Indonesia, which leads to rapid increases in wages for those with higher education (Atmanti, 2005).

Table 7. 9: Regression Results on Earnings Equation in Lesser Sunda Islands

Variables	1989				1999				2009			
	Female		Male		Female		Male		Female		Male	
	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio
INTERCEPT	4.423	34.312	4.758	44.835	5.804	45.182	6.178	59.407	7.633	110.121	7.923	162.510
NOS	-0.277	-3.041	-0.075*	-1.232	-0.144**	-1.531	0.004**	0.043	-0.128**	-1.383	-0.326	-4.314
SUB-PRIM	-0.230	-2.673	-0.244	-4.959	-0.140*	-1.736	-0.065**	-1.061	-0.087**	-1.447	-0.124	-2.945
JHS	0.408	4.047	0.302	5.577	0.486	5.334	0.299	5.275	0.226	4.216	0.141	3.923
VJHS	0.972	4.427	0.482	4.112	0.838	3.118	0.271*	2.184	0.476	2.883	-0.061**	-0.682
SHS	0.836	9.712	0.539	10.424	0.892	11.038	0.623	12.139	0.562	12.333	0.431	13.564
VSHS	0.970	12.120	0.665	13.927	1.237	15.553	0.706	12.251	0.754	14.860	0.487	13.687
DIPI-II	1.266	6.060	0.787	7.926	1.397	10.271	1.072	10.708	0.896	16.420	0.794	16.410
DIPIII	1.409	8.612	0.950	11.091	1.294	10.213	0.982	10.031	0.978	16.478	0.843	15.190
UNIV	1.519	10.328	1.131	16.022	1.509	14.789	1.069	15.235	1.123	22.774	0.906	25.083
URBAN	-0.093*	-1.789	-0.099	-3.261	-0.123	-2.554	0.023**	0.699	-0.048*	-1.871	0.076	4.218
HMA10	0.000**	-0.003	0.000**	-0.035	0.000**	0.014	-0.006**	-0.653	-0.004**	-0.548	-0.023	-4.882
HMB10	-0.005**	-0.242	0.024*	2.051	-0.048*	-1.880	-0.033*	-1.981	0.002**	0.123	0.007**	0.834
EXP	0.084	11.167	0.055	11.723	0.052	6.383	0.057	9.509	0.054	19.171	0.046	19.973
EXPSQ	-0.002	-8.806	-0.001	-6.829	-0.001	-4.225	-0.001	-7.331	-0.001	-8.334	-0.001	-7.640
MARRIED					0.274	4.897	0.026**	0.519	0.213	7.692	0.156	6.668
MIN	0.287	2.660	0.276	3.041	0.416	3.719	0.086**	0.847	0.003**	0.017	0.317	3.857
MAN	0.182*	1.776	0.412	4.449			0.313	3.120	-0.260	-3.880	-0.091*	-1.873
UTIL	0.282	2.402	-0.008**	-0.070	0.096**	0.931	0.522	2.433	0.387**	2.044	0.499	6.844
CONS			0.292**	1.077	0.343	2.593	0.315	3.432	-0.137**	-1.272	0.007**	0.154
TRADE	0.312*	2.069	0.233**	1.589	0.222*	1.904	0.231	2.320	-0.094**	-1.423	-0.117	-2.522
TRANS	0.429	3.602	0.389*	2.071	0.285**	1.186	0.181*	1.742	-0.041**	-0.397	-0.085*	-1.833
FINC	-0.351**	-1.437	0.343	2.970	0.215**	1.215	0.145**	1.096	-0.036**	-0.431	0.015**	0.277
SERV	0.018**	0.093	0.059**	0.446	0.136**	1.340	0.309	3.345	0.059**	0.971	0.154	3.825
R-squared	0.506		0.423		0.544		0.379		0.504		0.457	
No. of observation	677		1678		736		1589		2851		5471	

Note : (i) all coefficient are statistically significant at 1 per cent level unless indicated otherwise; (ii) *significant at 5 per cent level; (iii)**not statistically significant.

Interestingly, female workers who reside in urban areas earn less income than those who are in rural. This negative estimation is consistent across the year of 1989 to 2009. In the meantime, this estimation changed over time for male employees. Male workers in urban obtained lower earnings in 1989, but, their income estimate increase by 1999 and 2009.

In cognisant of marital status and family household members for workers in LSI, married female workers showed higher percentage of income than male counterparts in 1999 and 2009. Possible explanation for this might be due to that married female have to work harder in order to provide a better life for their family. In addition, possibly, this can be supported by female wage estimation under the variable of the age of household members. For example, female workers with family members who aged below ten years old have lower income than male employees.

Further, industry variables showed various wage estimation amongst workers in this region. There is a tendency than female employees received higher earnings in several sectors other than agriculture sites. Their income also higher compared to male employees in most industries. However, for electricity, gas, and water sector, there is the likelihood that male workers dominated this industry. In 1989 to 2009, the female income tend to decrease over time. In the other side, the male workers used to have lower wage than female workers in 1989, but in 1999 and 2009, it increases about two times higher than female employees.

7.5.4 Earnings Equation Estimates in Kalimantan

Kalimantan or known as Borneo is one of a largest island in Indonesia. Although Kalimantan is one of the richest regions in Indonesia (Vickers, 2005), only employees who hold senior high school qualification and university degrees show a statistical

significance in the determination of earnings. Kalimantan is largely covered by forests and this island has one of the largest tropical forests in the world. The main industries of this region are mining, farming and forestry and they mainly employ unskilled workers as they do not need highly skilled labour, in contrast to Java region.

In regards to wage estimation in this region, the workers in Kalimantan showed negative sign to no schooling and primary education effect on earnings. Similar to wage estimation in Sumatera, Java, and LSI, further level of schooling starting from secondary schools to higher education showed positive impact on female income. Mostly, female employees who obtained secondary and higher education enjoyed higher earnings compared to male employees.

In addition to education, the workers' residential area have an impact on earnings. Female employees who reside in urban areas, in particular, received lower income than their male counterpart in 1989 and 2009. In 1999, however, urban female workers tend to have higher earnings compared to male employees. This changed could possibly caused by trend and mobilisation of female workers from rural to urban areas in that period; therefore, a different in female income level could be expected.

As showed in previous regions such as Sumatera or Java, marriage and family characteristic are variables that affecting income. Married female workers, for instance, earn higher income than married male employees in 1999. However, the wage estimation

Table 7. 10: Regression Results on Earnings Equation in Kalimantan

Variables	1989				1999				2009			
	Female		Male		Female		Male		Female		Male	
	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio
INTERCEPT	5.155	17.816	5.474	40.697	6.311	32.799	6.523	45.090	7.811	163.175	8.292	314.267
NOS	-0.323	-2.732	-0.078**	-1.340	-0.364	-2.679	-0.325	-2.870	-0.127**	-1.580	-0.255	-4.226
SUB-PRIM	-0.336	-4.059	-0.016**	-0.440	-0.404	-3.541	-0.158	-2.661	-0.032**	-0.711	-0.133	-5.529
JHS	0.300	3.227	0.235	6.270	0.252	2.421	0.279	5.455	0.205	4.609	0.122	5.832
VJHS	0.226**	1.559	0.363	5.049	0.795	3.773	0.287	2.855	0.294*	2.163	0.210	3.976
SHS	0.598	7.561	0.468	12.426	0.778	8.460	0.536	11.277	0.618	15.926	0.360	17.767
VSHS	0.583	7.969	0.485	13.339	1.005	10.897	0.689	13.192	0.739	16.422	0.488	20.266
DIPI-II	0.807	5.985	0.680	7.400	1.193	9.741	1.011	9.481	0.928	19.174	0.757	19.582
DIPIII	1.057	6.363	0.762	10.515	1.234	7.097	1.049	9.977	0.984	18.497	0.749	17.515
UNI	0.895	5.166	1.022	15.741	1.251	10.285	1.041	14.468	1.085	25.247	0.909	32.706
URBAN	-0.134	-2.592	0.060	2.325	0.110*	1.953	0.084	2.549	-0.026**	-1.117	0.065	4.710
HMA10	-0.027	-2.705	-0.008**	-1.479	-0.035	-2.432	-0.014**	-1.574	-0.001**	-0.213	-0.008*	-2.096
HMB10	-0.007**	-0.347	-0.015**	-1.522	0.046**	1.575	0.020**	1.183	0.009**	0.729	-0.013*	-1.836
EXP	0.064	7.982	0.055	14.011	0.066	7.324	0.046	8.010	0.062	14.178	0.034	17.547
EXPSQ	-0.001	-5.163	-0.001	-8.994	-0.001	-5.189	-0.001	-5.940	-0.001	-5.497	0.000	-6.747
MARRIED					0.158	2.381	0.121	2.535	0.177	7.161	0.226	14.200
MIN	0.173**	0.598	-0.088**	-0.679	0.186**	1.050	0.345	2.522	0.391	4.993	0.279	12.487
MAN	0.157**	0.556	-0.111**	-0.858			0.125**	0.900	-0.157	-2.986	-0.042**	-1.517
UTIL	0.208**	0.689	0.140**	1.027	-0.018**	-0.103	0.448*	1.802	0.000**	0.000	0.209	2.840
CONS	0.611**	1.561	0.233**	1.638	0.300**	1.019	0.231**	1.637	0.232*	1.791	0.020**	0.828
TRADE	-0.031**	-0.086	-0.100**	-0.552	-0.121**	-0.673	-0.001**	-0.006	-0.287	-6.180	-0.273	-9.544
TRANS	0.643**	1.443	-0.323**	-1.272	-0.283**	-1.174	0.377	2.564	-0.192*	-2.147	-0.021**	-0.741
FINC	0.295**	1.038	-0.079**	-0.604	-0.124**	-0.434	0.138**	0.741	0.073**	0.974	0.146	3.348
SERV	0.274**	0.949	-0.076**	-0.561	-0.180**	-1.058	0.199**	1.450	-0.118	-3.205	-0.034*	-1.666
R-squared	0.411		0.372		0.53		0.376		0.452		0.335	
No. of observation	496		1655		606		1647		4395		10699	

Note : (i) all coefficient are statistically significant at 1 per cent level unless indicated otherwise; (ii) *significant at 5 per cent level; (iii)**not statistically significant.

changed in 2009 whereby, at this period, married female workers earnings is lower than their male counterpart. In addition, regarding the age of household members variable, both female and male employees obtained lower earnings if they have family members who aged above ten years old (HMA10). Conversely, in 1999 and 2009, female workers tend to earn higher income when they have younger household members. But, this not applied to 1989's estimation. Even though female workers family members are below ten, this does not bring the difference for their earnings level.

In industry factor, female workers in this region received higher earnings than male employees in most industrial sectors in 1989. In contrast, in 2009, where many of industrial sector statistically significant in explaining premium earning in this region. Male employees obtained more income than female workers across all type of industry. However, wage estimation on industry showed a rather mix estimate. Yet, female workers are predominantly received higher income than male employees.

7.5.5 Earnings Equation Estimates in Sulawesi

Table 7.11 presents wage estimation in the region of Sulawesi (Celebes). Female workers residing in Sulawesi with no schooling and sub primary education earn higher income in 1989 and 1999. But, in 2009, this estimation showed a negative sign. With exception for the VJHS, all secondary and higher education, however, was statistically significant in explaining the effect of education on earnings in the region.

In cognisant of residential area and family matters, the trend is slightly different with other regions such as Sumatera or Java. Residential factor, for example, showed that female workers can earn higher income if they reside in urban areas in 1989. But, in 1999 and 2009, female employees who live in urban areas obtained lower income compared to those in rural. There is possibility that, within 1999 and 2009, the job market in Sulawesi

Table 7. 11: Regression Results on Earnings Equation in Sulawesi

Variables	1989				1999				2009			
	Female		Male		Female		Male		Female		Male	
	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio
INTERCEPT	4.710	20.739	5.031	36.656	5.469	36.546	6.282	60.801	7.554	137.550	7.808	242.302
NOS	0.016**	0.080	-0.391	-4.178	0.216**	0.790	0.249**	1.305	-0.416	-3.501	-0.155*	-2.273
SUB-PRIM	-0.291	-2.406	-0.183	-3.629	-0.001**	-0.006	0.083**	1.026	-0.087**	-1.440	-0.069	-2.362
JHS	0.679	7.135	0.176	4.224	0.600	4.695	0.302	4.818	0.061**	1.099	0.061*	2.240
VJHS	0.849	3.519	0.280	3.331	1.812	2.880	0.220*	1.741	-0.063**	-0.434	0.118*	1.744
SHS	1.151	14.840	0.511	12.369	1.321	12.702	0.643	10.625	0.354	7.630	0.333	12.952
VSHS	1.286	17.280	0.590	13.911	1.359	12.960	0.695	10.266	0.538	10.607	0.365	11.893
DIPI-II	1.446	12.655	0.777	9.411	1.590	11.928	0.928	8.366	0.726	13.846	0.674	14.474
DIPIII	1.358	12.223	0.829	12.934	1.865	13.188	0.914	8.810	0.858	14.634	0.758	14.232
UNI	1.737	15.949	1.013	18.079	1.709	14.278	1.048	13.342	1.060	21.928	1.007	33.019
URBAN	0.024**	0.477	0.082	2.820	-0.069**	-1.182	0.049**	1.310	-0.062	-2.712	-0.078	-5.070
HMA10	-0.007**	-0.782	-0.002**	-0.427	0.003**	0.227	-0.020*	-2.033	-0.012	-2.120	-0.002**	-0.462
HMB10	0.016**	0.880	-0.017*	-1.690	0.032**	1.131	-0.030*	-1.682	0.012**	1.012	-0.017*	-2.250
EXP	0.072	9.474	0.057	13.001	0.049	5.251	0.046	6.412	0.075	29.254	0.040	18.074
EXPSQ	-0.001	-4.458	-0.001	-7.926	0.000*	-1.694	-0.001	-3.488	-0.001	-11.619	0.000	-4.941
MARRIED					0.213	3.209	0.164	3.147	0.253	10.204	0.246	13.100
MIN	-0.210**	-0.931	0.162**	1.261	0.258**	1.196	0.194	2.046	0.029**	0.120	0.408	8.142
MAN	-0.375*	-1.788	0.173**	1.348	0.155**	0.945	0.038**	0.381	-0.184	-3.030	0.062*	1.844
UTIL	-0.511**	-1.207	0.038**	0.224	1.048*	1.646	0.235**	1.445	0.236**	1.193	0.387	5.426
CONS	0.524**	0.934	0.261*	1.853	0.172**	0.676	0.197*	2.129	0.198**	1.380	0.132	4.751
TRADE	0.568*	2.288	0.044**	0.231	-0.249**	-1.599	-0.023**	-0.226	-0.286	-5.214	-0.100	-2.894
TRANS			0.169**	0.447	-0.043**	-0.156	0.045**	0.476	-0.153*	-1.724	0.073	2.383
FINC	-0.289**	-1.131	0.155**	1.108	0.130**	0.585	0.416	3.270	0.136*	1.687	0.175	3.782
SERV	-0.911	-3.069	0.048**	0.320	0.146**	1.087	0.261	3.026	-0.127	-2.865	0.151	5.921
R-squared	0.607		0.421		0.602		0.406		0.458		0.375	
No. of observation	630		1762		588		1346		5511		10160	

Note : (i) all coefficient are statistically significant at 1 per cent level unless indicated otherwise; (ii) *significant at 5 per cent level; (iii)**not statistically significant.

region is less preferred in hiring female employees. However, in family related variables such as marriage or younger household members (HMB10), it showed that female workers tend to obtained higher income than male employees. By contrast, the female earnings declined when the household members reach ten years old or older. In regards to marriage, married female workers earn higher income than male employees in 1999. However, both female and male workers showed similar wage estimate in 2009.

Furthermore, industrial sectors also raise some attention in regards to female employees income. The proportion of the workers wage estimation in the regional industries between female and male workers is approximately proportional in most sectors. However, in trading and construction industry, female employees obtained much higher income than their male counterpart in 1989. Interestingly, it decreased and got lower over time. Meanwhile, in mining, male employees dominated this sector. In 1989 to 2009, they obtained higher earnings in all the observed periods compared to female worker.

7.5.6 Earnings Equation Estimates in Maluku

Table 7.12 presents wage estimation in the region of Maluku. Female workers residing in Maluku with no schooling earn higher income in 2009. This is in contrast with estimation showed in 1989 and 1999, whereby, the no schooling and sub primary variables were negative. However, the male workers almost consistently earn higher income in 1989 to 2009 with exception on one of the no schooling variable in 1999. In that year, the estimation showed a negative sign. With exception for the VJHS, all

Table 7. 12: Regression Results on Earnings Equation in Maluku

Variables	1989				1999				2009			
	Female		Male		Female		Male		Female		Male	
	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio
INTERCEPT	4.818	25.829	4.818	9.556	6.051	9.976	6.322	24.371	7.673	39.116	7.926	95.427
NOS	-0.290**	-1.080	0.032**	0.126	-0.279**	-0.391	-0.267**	-0.629	0.110**	0.330	0.230**	0.837
SUB-PRIM	-0.321*	-2.023	0.060**	0.503	-0.051**	-0.110	0.024**	0.054	-0.281**	-1.230	0.001**	0.011
JHS	0.111**	0.693	0.329	3.526	0.247**	0.488	0.191**	1.209	0.102**	0.514	0.028**	0.377
VJHS	0.520**	1.189	0.397	2.940	0.667**	1.235	-0.096**	-0.282	0.139**	0.388	0.185**	1.066
SHS	0.716	5.730	0.628	7.263	0.980	2.713	0.614	4.140	0.350	2.314	0.225	3.401
VSHS	0.767	6.217	0.596	7.304	1.244	3.209	0.368*	2.115	0.522	3.127	0.437	5.558
DIPI-II	0.750	4.033	0.753	4.945	0.415**	0.834	0.791	3.062	0.652	4.077	0.406	4.103
DIPIII	1.277	6.455	0.851	4.847	1.360*	2.084	1.033	3.852	0.820	4.580	0.760	6.220
UNI	1.276	7.286	0.960	8.022	0.872*	2.041	0.845	3.472	0.871	5.594	0.839	10.811
URBAN	0.117**	1.352	0.068**	0.981	-0.354**	-1.460	-0.218*	-1.747	0.023**	0.406	0.032**	0.853
HMA10	-0.015**	-1.206	-0.029	-3.050	0.003**	0.073	0.033**	1.221	-0.006**	-0.460	-0.014*	-1.730
HMB10	-0.019**	-0.537	0.010**	0.486	0.069**	0.728	-0.078*	-1.670	0.001**	0.031	-0.009**	-0.591
EXP	0.068	5.643	0.067	7.088	0.036**	0.743	0.046	2.492	0.096	8.902	0.047	12.856
EXPSQ	-0.001	-2.995	-0.001	-4.571	0.000**	-0.231	0.000**	-1.096	-0.002	-5.028	0.000	-5.274
MARRIED					0.023**	0.122	0.179**	1.163	0.247	3.938	0.159	3.651
MIN	0.207	2.095	0.281**	0.553	0.530**	0.947	0.272**	1.283	0.597**	1.337	0.581	5.401
MAN			0.329**	0.649	-0.010**	-0.024	0.479	2.426	0.107**	0.465	0.210	2.091
UTIL			0.572**	0.932			0.773*	1.924	0.027**	0.117	0.605	5.405
CONS	1.145	5.006	0.657**	0.903	1.966	2.877	0.220**	0.987	-0.102**	-0.343	0.349	4.865
TRADE							0.296**	1.268	-0.342*	-1.990	-0.190*	-1.878
TRANS					0.962*	1.888			-0.304**	-1.104	0.214	2.676
FINC	0.035**	0.133	0.184**	0.311	1.004*	2.034	0.195**	0.570	0.102**	0.427	0.525	3.956
SERV			0.190**	0.349	0.702*	2.271	0.450	2.984	-0.057**	-0.401	0.340	5.062
R-square	0.575		0.394		0.631		0.507		0.418		0.402	
No. of observation	168		385		59		156		760		1568	

Note : (i) all coefficient are statistically significant at 1 per cent level unless indicated otherwise; (ii) *significant at 5 per cent level; (iii)**not statistically significant.

secondary and higher education, however, was statistically significant in explaining the effect of education on earnings in Maluku region.

In regards to residential area and family matters, the trend is slightly different with other regions such as LSI or Java. Residential factor, for example, showed that female workers can earn higher income if they reside in urban areas in 1989 and 2009. But, in 1999, female employees who live in urban areas obtained lower income compared to those in rural. However, in family related variables such as marriage or household members, female workers', regardless the age of household members, their wage estimate was negative in 1989 which means that the female employees earn lower income in that period. In terms of marriage link to earnings, the female employees earn lower income compared to male workers in 1999. However, this trend changed in 2009; the female earnings increase and higher than their male counterpart.

Unfortunately, national survey data on industry in Maluku is considerably incomplete compared to the other regions. However, amongst industry variables, the mining and construction sectors showed an interesting pattern of estimation. In these industries, female employees' earnings increase as time progressed and tend to get higher than male workers except on construction site in 2009.

7.5.7 Earnings Equation Estimates in Papua

Table 7.13 presents wage estimation in the region of Papua. With exception for the sub primary variable in 2009, female workers residing in Papua with no schooling and sub primary education predominantly earn lower income in 1989 to 2009. However, all higher education level in the province was statistically significant in explaining the effect of education on earnings in the region. Wage estimation for female workers

Table 7. 13: Regression Results on Earnings Equation in Papua

Variables	1989				1999				2009			
	Female		Male		Female		Male		Female		Male	
	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio	Coeff.	T-ratio
INTERCEPT	4.221	12.571	5.472	10.701	6.941	20.280	6.526	27.629	8.302	79.186	8.611	137.735
NS	-0.653**	-1.416	-0.955	-2.636	-0.339**	-1.014	-0.059**	-0.096	-0.130**	-0.612	-0.369	-2.936
SUB-PRIM	-1.310	-3.708	-0.573	-4.314	-0.438**	-0.789	0.159**	0.487	0.037**	0.301	-0.047**	-0.688
JHS	0.768	2.508	0.291	3.829	0.462**	1.202	0.229**	1.464	0.208*	2.110	0.005**	0.091
VJHS	0.478**	1.310	0.147**	1.357	1.112*	1.851	0.350**	1.491	0.307**	0.912	0.083**	0.771
SHS	1.155	5.461	0.703	8.506	0.482*	2.158	0.718	4.879	0.426	4.844	0.337	6.494
VSHS	1.449	6.803	0.585	8.093	0.940	4.367	0.774	5.170	0.495	5.352	0.330	5.891
DIPI-II	1.746	4.932	1.394	6.183	1.208	2.861	1.200	2.721	0.602	5.472	0.581	6.700
DIPIII	1.441	4.768	0.885	7.663	1.296	4.086	1.117	4.359	0.754	6.804	0.560	6.937
UNI	1.824	7.026	1.138	8.510	1.252	3.571	1.085	5.381	0.886	9.489	0.719	12.133
URBAN		3.493	0.265	4.452	-0.028**	-0.128	0.146**	1.382	-0.141	-3.111	-0.005**	-0.192
HMA10	-0.046**	-1.563	-0.047	-3.851	0.010**	0.301	0.002**	0.093	0.006**	0.769	-0.019	-2.854
HMB10	0.026**	0.494	-0.017**	-0.944	-0.032**	-0.559	-0.026	-0.732	-0.065	-3.218	-0.036	-2.974
EXP	0.074	2.807	0.066	6.507	0.032**	1.201	0.055	3.325	0.046	5.589	0.036	11.924
EXPSQ	-0.001**	-1.592	-0.001	-2.988	0.000**	-0.308	-0.001*	-1.718	-0.001	-2.955	0.000	-5.148
MARRIED					0.161**	0.976	0.275	2.259	0.172	3.670	0.172	4.895
MIN	0.840	4.088	-0.345**	-0.704					0.915	3.098	0.628	9.282
MAN			-0.040**	-0.082	-1.096	-2.902	0.031**	0.193	0.071**	0.649	-0.096**	-1.533
UTIL	0.917*	1.984	-0.071**	-0.128			-0.338**	-1.216	0.230**	0.558	0.225**	1.504
CONS			0.364**	0.648			-0.248**	-1.287	0.338*	1.656	-0.059**	-1.090
TRADE	0.885**	1.489	-0.732**	-1.073	-0.861	-2.485	-0.684	-3.413	-0.049**	-0.513	-0.361	-5.315
TRANS	-0.798**	-1.215			0.370**	0.915	-0.207**	-1.224	0.214**	1.210	-0.216	-3.512
FINC			-0.465**	-0.869	0.293**	0.722	-0.103**	-0.380	0.105**	0.711	0.253	2.495
SERV	0.772**	1.292	-0.118**	-0.171	-0.109**	-0.407	0.046**	0.363	0.286	3.569	0.094*	2.027
R-squared	0.705		0.491		0.638		0.441		0.407		0.387	
No. of observation	105		426		84		264		826		2311	

Note : (i) all coefficient are statistically significant at 1 per cent level unless indicated otherwise; (ii) *significant at 5 per cent level; (iii)**not statistically significant.

who obtained secondary and higher education showed that female earnings is higher compared to male employees. Higher education of diploma and university consistently presented the highest estimation of workers' wage across times.

Residential area and number of family members presumably affecting wage estimation in the region. For example, in 1989, it showed that female workers earn higher income if they reside in urban areas. But, in 1999 and 2009, female employees who live in urban areas obtained lower income compared to those in rural. However, in 1989, female workers tend to obtained higher income than male employees when they have younger members of household (HMB10). By contrast, the female earnings declined when the household members reach ten years old or more.

Interestingly, the highest regional rate for return to education is Western New Guinea, which consists of Papua and West Papua province. The abundant natural resources in the region resulted in larger wages in Papua compared with Java (Aritonang and Steenbrink, 2009). Not surprising, the largest skill premium among the population is to be found in the territory of Papua. Since this region has been granted special autonomy, together with Aceh province, it is possible that individual earnings in this region are much higher than in other provinces. In addition, this region is less densely populated, with only around 8 person /km^2 (BPS, 2010). On the other hand, the population of Papua in general is still far behind in terms of infrastructure, education, and health compared to people in other regions.

Furthermore, industrial sectors also raise some estimation in the regional industries between female and male workers in most sectors. In mining industry, women dominantly have higher income across the observed time. In addition, women used to earn higher income in trading sector in 1989. However, it decreased and got lower over time.

7.6 Conclusion

The findings in this chapter confirmed that education plays a significant role in individual's earnings. The effect of education on earnings grows as the education level increases. The data reveal that the university education level has generated the highest returns on education, while 'no schooling' contributes the lowest rate of returns. This result is coherent with Berhman and Deolalikar's (1995) estimates on the earnings function in Indonesia, which showed that the effect of education on earnings is greater for those with higher levels of education.

Since the implementation of Law No. 2, 1989, stipulating nine years' compulsory basic education for everyone, all people in every region should have access to both primary and secondary education. Unfortunately, the data demonstrated that different levels of education have been attained from region to region. This disparity has probably been influenced by poverty and the level of parents' education. Poverty and poorly educated parents may have affected how these people value education.

Furthermore, all education variables and regions proved to be statistically significant in explaining the effects of education and regions on earnings. Comparing the returns among the regions, all regions in 1989 had higher returns than Java. However, unlike the 1989 regression results, in 1999 the LSI and Sulawesi showed lower returns than Java. In general, the return in 1989 is higher than the returns in 1999 and 2009. The lower return in LSI may have been due to the financial crisis that hit the Southeast in 1997.

Although the return to education in Kalimantan has a positive sign over the study period, the effect of education on earnings decreased from 46 per cent in 1989 to 33 per cent in 2009. In Sulawesi, the results of the regression showed a positive result only in

1989, which means individuals working in Sulawesi in 1989 had larger incomes than those working on the island of Java. However, in 1999 and 2009, the wages of individuals in Sulawesi declined by 16 per cent and 6.9 per cent respectively. Meanwhile, the analysis of Maluku region displayed a similar trend to that of Kalimantan, in that individual earnings in Maluku were larger than those in Java over the last three decades. The regression results indicated that, in 1989, individual earnings in Maluku were greater than those in 1999 and 2009. The last region, Papua, showed different results from Maluku, Kalimantan and Sumatera. The effect of education on earnings in the region increased from 1989 by 45 per cent to 51 per cent in 1999 and to 79 per cent in 2009.

CHAPTER 8
GENDER DISCRIMINATION AND THE EARNINGS DIFFERENTIAL

8.1 Introduction

The rate of return to education, as discussed in chapters 6 and 7, shows that college/university degrees are more sought after by both male and females compared to other levels of education. The trend over the last ten years shows that more Indonesian females have access to university education, which implies an increase in women's earnings. The literature on gender discrimination and earnings differential is quite extensive. However, gender discrimination and earnings differentials present in the Indonesian labour market has not yet received a systematic empirical treatment. This empirical part of thesis aims to find sources and factors of gender discrimination and earnings differentials in order to fill the gap in the literature.

According to the World Bank (2010b), discrimination based on gender is still apparent in all aspects of life despite the rapid progress that has been made in gender equality today. The levels and characteristics of discrimination differ considerably among nations. Clearly, there are no developing nations in which female have equal rights in legal, social and economic realms. Gender gaps in opportunity and control over resources, economy, political power and political participation still exist in many countries.

Over the past two decades, women's participation in the labour force has grown rapidly in all types of jobs in Indonesia. Although the earnings gap between males and females had existed long before Indonesia's independence in 1945, the public has realized that there is a significant earnings differential between male and female workers in the Indonesian labour market. Previously, this issue was raised only on a superficial level since many women did not work and spent more time at home taking care of the

household (Hill, 1979). However, after 2003, when the government of Indonesia imposed equal wages for equal work, the earnings gap became a social and economic problem. This discrimination issue arose due to the earnings gap between men and women, despite women working as hard as men and having gained the same level of education.

Long before Indonesia gained its independence, many women in Indonesia had held strategic positions, in both the political and education sectors. For example, Kartini (1879-1904) had fought vigorously for women's education, which was considered important for increasing Indonesia's rate of national development. Kartini believed that educated women would be able to contribute more to society. After Indonesia's independence in 1945, however, the Indonesian government tended to prefer women to remain institutionally domesticated. The leaders of Indonesia put women back into the household so that they could not compete with men in education, employment and public affairs.

During the New Order era of President Suharto (1966-1998), women's domestication became more entrenched with the establishment of the organization PKK (Family Welfare Education) set up by the government. This has a top-down hierarchy and the structure of a feudal organization starting from the president down to the wives of village heads. The vertical command line starts from the president down to *Dharma Wanita*, the civil servants' wives union, and to the military organization, *Dharma Pertiwi*. Women's domestication programs are run nationally as the PKK, *Dharma Wanita* and *Dharma Pertiwi* organize activities related to the position of women. This form of gender discrimination has been part of the legal system for decades, dealing with religious, cultural and social values (Noerdin, 2005). Nevertheless, the status of women has changed with demographic changes and socio-economic development in the community.

This chapter presents the results of the empirical analysis of the factors and sources of gender discrimination and earnings differentials in the Indonesian labour market. This

chapter lays down the methodology and describes the variables and data for the following two empirical chapters, which explore the relationships between gender discrimination and earnings differentials. In addition, this chapter develops the framework for the empirical analysis to evaluate the effects of government policy in reducing the male-female wage gap. This chapter also describes the trend of gender discrimination and earnings differential over three decades (1989-2009). We reveal that women have been mainly associated with domestic responsibilities such as raising children and other household activities. However, the improvement in women's education has increased their participation in all kinds of jobs.

This chapter is organized as follows: The next section presents the theory of labour market discrimination and earnings differentials. The concept of discrimination is also discussed in this section. This is followed by the gender earnings decomposition method, results and sensitivity analysis. This section explains the method used to analyze the gender discrimination and earnings differential. The next section provides the descriptive statistics for the period 1989-2009. In the following section, we present the regression results of gender earnings equation estimates followed by the decomposition of earnings differentials. The last section will be the conclusion of this chapter.

8.2 Theories of Labour Market Discrimination and Gender Earnings Differential

Generally speaking, men are physically stronger than women. In the past, when industry was not well developed and most individuals worked in agriculture, the difference in physical strength tended to be the cause of differences in earnings. According to the theory of comparative advantage, as mentioned by Polachek (1975b) and Becker (1985), the division of labour resulted in men being allocated jobs that require physical strength, while domestic and clerical jobs were reserved for women. However, along with the development of technology, this has restricted premium payments to

individuals with greater physical strength. In other words, men and women can do almost all of the jobs created by modern technology; however, male and female job categories still persist in the labour market, where women workers, on average, have lower job positions and earn less than men.

Gender discrimination refers to discrimination against certain individuals based on the characteristics of those individuals. Discrimination is commonly found in society due to individual differences between people. Subjecting people to unequal treatment on the grounds of sex, race, religion and faith, political party, physical condition and other characteristics is commonly known as discrimination.

It should be pointed out that there is a difference between sex and gender. The male and female sexes are biologically different, especially their reproduction systems. Sex is formed when the sperm from men and the egg cell or ovum from women meet, and it cannot be changed; meanwhile, gender refers to differences in functions and responsibilities. Theories on human capital investment and economic discrimination suggest that income differences among groups are due to gender differences in skills and productivity characteristics.

Gender can be defined as a function created by communities and an attitude that emerges from the interaction process between males and females. Biologically, there is a difference between males and females; however, societies perceive these differences in features in terms of social differentiation in male-female attitudes, rights, human resources and power. A common feature among societies is that women are considered responsible for raising children (Hill, 1979), while work duties are assigned to men. Like race, ethnicity and social strata, gender is one of the social categories that decide certain individuals' way of life and their participation in societies and economies. However, while not all individuals face discrimination on the basis of race and ethnicity, almost all societies feature discrimination based on gender in terms of wage gap and type of job.

This condition can sometimes change drastically as policy and social economy changes (World Bank, 2001).

In the late 20th century, there was a significant improvement in women's status and gender equality in almost all developing nations. There are at least three domains that might be considered areas where women's lives have improved. The first is education; on average, the number of girls enrolling in primary schools in Southeast Asia, sub-Saharan Africa, the Middle East and North Africa has doubled. This trend may reduce the gender gap in education. Second, women's life expectancy has increased by 15 to 20 years in developing countries. An increase in budget allocation to give girls and adult females better access to healthcare services has increased the pattern of life expectancy for women and men in developing nations in all regions. Third, since the 1970s, women's participation in the labour force has increased on average by 15 per cent in East Asia and Latin America. The growing number of women in the labour force is reducing the gender gap in occupations and earnings (World Bank, 2001).

Oaxaca (1973) explained that discrimination against females can exist whenever the relative wage of males exceeds the relative wage that might prevail were males and females to be were paid according to same criteria[22]. He developed the concept of a discrimination coefficient as a proposed measure of discrimination:

$$D = \frac{\overline{W}_m / \overline{W}_f - (\overline{W}_m / \overline{W}_f)^0}{(\overline{W}_m / \overline{W}_f)^0} \qquad (8.1)$$

Where D = the discrimination coefficient

$\overline{W}_m / \overline{W}_f$ = the observed male-female average hourly earnings ratio

[22] Discrimination can be said to exist only if women with the same characteristics as men tend to receive lower salaries (Malkiel and Malkiel, 1973),

$(\overline{W}_m / \overline{W}_f)^0$ = the average hourly earnings ratio in the absence of discrimination

m = represents the male sample

f = represents the female sample

The differences in earnings and employment opportunities may arise even among equally skilled workers employed in the same job simply because of the workers' race, gender, national origin, sexual orientation or other seemingly irrelevant characteristics. These differences are often attributed to labour market discrimination. Three general sources of labour market discrimination have been hypothesized and each source suggests an associated model of how discrimination is implemented and what its consequences are. Nor (1998) identifies three sources of labour market discrimination. The first source of discrimination is personal prejudice, wherein employers, fellow employees, or customers dislike associating with workers of a given race or sex (Becker, 1971). The second general source is statistical prejudgement, whereby employers project onto individuals certain perceived group characteristics. Finally, there are models based on the presence of non-competitive forces in the labour market.

8.3 Gender Earnings Decomposition Method

Average earnings may differ between women and men either because of pre-market differences in average levels of productive characteristics or because of differences in what women and men are paid for possessing such characteristics. Since the work of Becker (1971) on the economics of discrimination, studies of labour market discrimination have emerged in the labour economics literature. Most of these studies apply a particular method of decomposition in determining earnings differentials between gender, race, caste and religion. The most popular method of analyzing wage

discrimination is the Blinder-Oaxaca decomposition, introduced by Blinder (1973) and Oaxaca (1973). The estimation method of wage decomposition has been extended by Neumark (1988), Cotton (1988), Juhn et al. (1991), Oaxaca and Ransom (1994), Blau and Kahn (1996) and Olsen and Walby (2004).

This research applies the Blinder-Oaxaca decomposition method in the context of gender. According to this framework, the average wage differences between males and females are separated into two parts. One part measures the impact of differences in the estimated coefficients of the wage equation, while the other part measures the impact of endowment differences. The Blinder-Oaxaca (1973) and Mincer (1974) earnings estimation functions are given by

$$LnW_i = \beta_0 + \sum_{i=1}^{n} \beta_i X_i + \varepsilon_i \qquad (8.2)$$

Where LnW_i is log hourly wage for individual i, $X_{1i}, \ldots X_{ni}$ are individual characteristics, β denotes the regression coefficients, and ε_i is a random error term. Researchers have applied equation (8.2) to estimate the gender wage gap such that

$$LnW_i = \beta_0 + \sum_{i=1}^{n} \beta_i X_i + DiYi + \varepsilon_i \qquad (8.3)$$

Where $Di = 1$ if female and 0 if male. The log wage functions use the pooled sample of males and females and the coefficient of the gender dummy, Y_i. In order to investigate and analyze the source of earnings differences between males and females, the equation (8.2) is to be estimated separately for each group:

$$LnW_m = \beta_{om} + \sum_{i=1}^{n} \beta_m X_m + \varepsilon_m \qquad (8.4)$$

$$LnW_f = \beta_{of} + \sum_{i=1}^{n} \beta_f X_f + \varepsilon_f \qquad (8.5)$$

Where subscripts m and f represent male and female, *X* are individual characteristics, and β are the estimated parameters from wage equation. To compute the portion of earnings differential between males and females, given that males earn more than females in all categories, equation (8.4) is subtracted from equation (8.5). Thus, the predicted average gender wage differentials can be written as

$$\begin{aligned}
&\overline{LnW}_m - \overline{LnW}_f = (\alpha_m - \alpha_f) + (\sum \beta_m \bar{X}_m - \sum \beta_f \bar{X}_f) + (\varepsilon_m - \varepsilon_f) \\
&\overline{LnW}_m - \overline{LnW}_f = (\alpha_m - \alpha_f) + (\sum \beta_m \bar{X}_m - \sum \beta_f \bar{X}_f) + (\sum \beta_f \bar{X}_f - \sum \beta_m \bar{X}_m) + (\varepsilon_m - \varepsilon_f) \\
&\overline{LnW}_m - \overline{LnW}_f = (\alpha_m - \alpha_f) + (\sum \beta_m \bar{X}_m - \sum \beta_m \bar{X}_f) + (\sum \beta_m \bar{X}_f - \sum \beta_f \bar{X}_f) + (\varepsilon_m - \varepsilon_f) \\
&\overline{LnW}_m - \overline{LnW}_f = (\alpha_m - \alpha_f) + \sum \beta_m (\bar{X}_m - \bar{X}_f) + \sum \bar{X}_f (\beta_m - \beta_f) + (\varepsilon_m - \varepsilon_f) \qquad (8.6)
\end{aligned}$$

The above equations indicate that the mean difference between male and female log earnings is the result of the differences in average endowments and the unexplained or structural factors in the labour market. The first part on the right hand side estimates the amount of the differential due to endowment factors between male and female groups. The second part is referred to as the discrimination effect between the groups. Intuitively, if the labour market is gender-neutral, the same endowments will produce the same effects on wages regardless of gender differences; hence, the regression will produce very similar coefficients. The difference in the coefficient between males and females reflects the bias in the labour market. The former part is referred to as that part due to discrimination. The difference between the male and female coefficient vectors is:

$$\Delta\beta = \beta_m - \beta_f \text{ Implying that } \beta_f = \beta_m - \Delta\beta \qquad (8.7)$$

In summary, the differential between males and females can be defined as:

$$R = \alpha_m + \sum_{i=1}^{n} \beta_m \bar{X}_m - (\alpha_f + \sum_{i=1}^{n} \beta_f \bar{X}_f) \quad (8.8)$$

$$E = \sum \beta_m (\bar{X}_m - \bar{X}_f) \quad (8.9)$$

$$C = \sum \bar{X}_f (\beta_m - \beta_f) \quad (8.10)$$

$$U = (\beta_m - \beta_f) \quad (8.11)$$

$$D = C + U \quad (8.12)$$

Where *R* is raw differential, *E* is portion of differential attributable to differing endowments, *C* is portion of differential attributable to differing coefficients, *U* is unexplained portion of the differential and *D* is portion of differential attributable to discrimination.

Aside from Blinder-Oaxaca decomposition approach (1973). There are some other approaches existing in the literature in determining earnings differential such as Juhn et al. (1991) and Olsen and Walby (2004). The Juhn, Murphy and Pierce (1991, JMP hereafter) decomposition equation for wage differentials across time periods. The JMP method explains the gender earnings gap in terms of differences in characteristics (predicted gap) and in terms of differences in residuals (residual gap). The residual gap is further specified in terms of the standard deviation of the residuals and standardized residuals. The standard deviation of the residuals of the wage equation is considered as both within group wage inequality and the price of unobserved skills. JMP method started with standard earnings equation:

$$Y_{it} = X_{it}\beta_t + U_{it} \quad (8.13)$$

where Y_{it} is log of worker earnings, Xit is a vector containing the observable characteristics of an individual and β_{it} is the coefficients on these characteristics in year t. The actual wage differential between males and females can be simply:

$$D_t = Y_{mt} - Y_{ft} = X_{mt}\beta_t + U_{mt} - (X_{ft}\beta_t + U_{ft})$$

$$= (X_{mt} - X_{ft})\beta_t - U_{ft}$$

$$= \Delta X_t \beta_t - U_{ft} \tag{8.14}$$

where $\Delta X_t = (X_{mt} - X_{ft})$, the term $\Delta X_t \beta_t$ is the predicted gap between male and female, and $-U_{ft}$ is the residual gap. In order to compute wage differentials between males and females between one year, such as year t and another year, such as year t', JMP formulate the above equation as:

$$D_{t'} - D_t = (\Delta X_{t'} - \Delta X_t)\beta_t + \Delta X_{t'}(\beta_{t'} - \beta_t) - (U_{ft'} - U_{ft}) \tag{8.15}$$

where $(\Delta X_{t'} - \Delta X_t)\beta_t$ changes at fixed prices, price effects $\Delta X_{t'}(\beta_{t'} - \beta_t)$, and changes in residual $-(U_{ft'} - U_{ft})$. JMP method rewrites the standard earnings equation to include a standardized residual (θ_{it}) in place of typical residual (ε_{it}). JMP earnings equation (pooled regression) can be written as:

$$Y_{it} = X_{it}\beta_t + \sigma_t \theta_{it}, \tag{8.16}$$

θ_{it} is the standardized residual. σ_t is the standard deviation in year t. The earnings differential between males and females is

$$D_t = Y_{mt} - Y_{ft} = \Delta X_t \beta_t + \sigma_t \Delta\theta_t \tag{8.17}$$

Where $\Delta\theta_t$ is the difference in the average standardized residual between males and females. The JMP and Blau and Kahn (1996) gender earnings decomposition from year t to year t' can be written:

$$D_{t'} - D_t = (\Delta X_{t'} - \Delta X_t)\beta_t + \Delta X_{t'}(\beta_{t'} - \beta_t) + (\Delta\theta_{t'} - \Delta\theta_t)\sigma_t + \Delta\theta_{t'}(\sigma_{t'} - \sigma_t) \tag{8.18}$$

The first two terms are identical to those in equation (8.15). The first term and often referred to in the literature such as Blinder-Oaxaca (1971) as the observed X's effect, whereas second term shows the observed prices effect. JMP interpret the third component

as reflecting possible differences in unmeasured skills as well as discrimination. The fourth term, JMP decompose the unobserved prices component. JMP method relies on the assumption that discrimination is stable over time. This assumption is difficult to verify.

Another wage decomposition method has been proposed by Olsen and Walby (2004) in the UK. They have emphasised the importance of pooled regression, rather than separate regressions which are at the core of Blinder-Oaxaca (1971) method. The approach developed by Olsen and Walby (2004) is fitted for a pooled regression and then using simulated changes in the characteristics of the sample to quantify the contribution made by gender to the actual earnings gap. In their approach, the earnings differential can be written as :

$$\overline{W}_m - \overline{W}_f = \sum \beta' \Delta X \tag{8.19}$$

Where ΔX represents the average differences between males and females $(\bar{X}_m - \bar{X}_f)$ for each variable used it in the earnings equation. The term ΔX is a change factor and by multiplying it by β. This calculation can be expressed as percentage change of the pay gap, JMP method refer this as predicted gap. The model developed by Olsen and Walby (2004) is to tease out gender wage differentials for time series regression in which every individual is considered to have a series of different observations. This model gives attention only to variables whose value changes over the period.

Compare to other decomposition model such as Juhn, Murphy and Pierce (1991), Blau and Khan (1996) and Olsen and Walby (2004) basically their model is in the spirit of Blinder-Oaxaca model. There are several reasons which may indicate suitability of the model in this study. First, Blinder-Oaxaca (1971) decomposition model is worldwide used to sort out claims of discrimination in salaries and wages. The Blinder-Oaxaca decomposition technique has provided a practical way in defining Gary Becker's (1971)

gender discrimination. Several other studies have also applied this approach such as Kim and Polachek (1994), Harkness (1996) and European Commission (2002). Second, since this study emphasize on gender earnings differentials and discrimination, the standard Blinder-Oaxaca decomposition was the appropriate model to apply in this research. JMP decomposition stronger if we focus on the price of unobserved skills. JMP pays attention to the importance of differences in unobserved skills for studying wage differentials (Yun, 2007).

This analysis is based on running separate regressions for males and females, and employing the standard Blinder and Oaxaca (1973) decomposition to assign different components of earnings differentials in endowment and coefficient. As is usual in this literature, the latter is treated as the estimate of discrimination.

The discrimination effect can be derived from both the realized and the potential wage. For example, for a similar endowment value, the actual or observed wage of a female should produce the same or equal observed wage for a male. Therefore, the effect of discrimination based on the observed wage can be measured as the difference between actual male wage and actual female wage for a given similar endowment.

According to Becker (1971), as he mentioned in his monumental book *The Economics of Discrimination*, the unexplained factors are due to differences in the way the market treats membership of particular groups, which is known as discrimination. Becker is considered the first to have introduced the concept of the discrimination coefficient in the early stages of discrimination. For Becker, market discrimination is often defined as the gross income difference between the two types of jobs that can be replaced. Becker then briefly explains that the market discrimination coefficient is applied in two factors that should not be perfect substitutes. He suggests that the coefficient of discrimination is the simple difference between actual wages and salaries obtained in the relative absence of discrimination.

8.4 Description of the Data

Despite the recent increase in wages for both women and men, women still have lower average hourly earnings than men. Table 8.1 presents the descriptive statistics across the study period (1989-2009), which show the earnings gap between male and female workers. The number of households surveyed in 2009 was much larger than in 1999 and 1989. The data show that female employees are highly underrepresented in all years of the study period. By analysing the means and standard deviations of these variables for each gender group, we will be able to see the differences in productive characteristics between each gender group. The average of hourly earnings is presented in both Indonesian Rupiah (IDR) and log earnings form. Female workers earned less than male workers throughout the study period (1989-2009). In 1989, for instance, female workers received IDR 6259.68 while male workers earned IDR 9050.71 an hour, on average. This result implies that the ratio between male and female earnings were 69 per cent in 1989. The ratio earnings between male and female received had increased by 71.5 per cent in 1999 and 88.2 per cent in 2009. According to Brinton (2001), using the 1995 yearbook of labour statistics data, these percentages are very similar to the ratio of 69.8 per cent in Taiwan, and above the ratios of 60.4 per cent in Japan and 54.6 per cent in South Korea.

The first step in analyzing earnings differentials is to consider potential sources of differences, many of which can be measured. One source of these earnings differentials is the differences in endowment factors such as education and age across genders. This prediction has been confirmed by several studies. Becker (1985) predicts that mothers spend more time outside the labour market and therefore have less work experience compared to single women. The qualifications required in the women's labour market

are lower than those of the men's because women assume the bulk of childcare and home responsibilities (Hill, 1979). Mincer (1974) argued that the difference in earnings distributions between men and women can be explained by human capital investment. Women, who are expected to spend only a part of their adult lives in the labour force, have less incentive to invest in forms of human capital that primarily enhance market productivities. Moreover, it is known from table 6.1 that the age of female employees workers is lower than that of male workers, which is correlated with potential labour market experience. Therefore, one would expect age and education to account for at least some of the difference in female/male differences.

Table 8.1 shows that the value of the most productive variable varies across groups during this study period (1989-2009). Male employees, on average, have more primary and secondary education, while females have more secondary and tertiary education. In the categories of 'no schooling' and 'sub-primary education', however, female employees accounted for a larger proportion than male employees in 1989 and 1999. Unlike in 1989, there were a larger percentage of female employees than male employees living in urban areas in 1999 and 2009, reflecting the fact that a larger proportion of female workers are working in urban areas. Although women are now employed more continuously over their life cycles, the tendency for women to have less labour market experience than men has been continuing (Waldfogel, 1997a). Table 8.1 also shows that the mean number of years of experience is higher for male than for female employees throughout the study period (1989-2009). Child rearing and home care responsibilities are one reason for women's lack of labour market experience (Oaxaca, 1973). This reflects the fact that men can generate higher earnings than women. Tables 8.2 and 8.3 provide the gender percentages of the labour force in various types of industries and occupations.

Table 8. 1: Descriptive Statistics by Gender, 1989-2009.

	1989				1999				2009			
	Male		Female		Male		Female		Male		Female	
	Mean	Std. Dev	Mean	Std. Dev	Mean	Std. Dev	Mean	Std. Dev	Mean	Std. Dev	Mean	Std. Dev
Real Earning	9050.71	503.31	6259.68	429.85	11934.37	2999.38	19611.39	3221.56	9521	12384.01	8403.23	9764.94
LnW	6.11	0.69	5.62	0.84	7.51	0.71	7.20	0.83	8.74	0.83	8.53	0.96
NS	0.05	0.21	0.12	0.32	0.02	0.15	0.06	0.24	0.01	0.09	0.01	0.12
SUB-PRIM	0.14	0.34	0.17	0.38	0.09	0.28	0.12	0.32	0.08	0.27	0.07	0.26
PRIM	0.29	0.45	0.24	0.43	0.26	0.44	0.24	0.43	0.17	0.37	0.14	0.34
JHS	0.13	0.33	0.07	0.26	0.15	0.36	0.10	0.30	0.16	0.37	0.12	0.32
VJHS	0.03	0.16	0.01	0.10	0.02	0.14	0.01	0.10	0.02	0.12	0.01	0.09
SHS	0.16	0.36	0.12	0.32	0.22	0.41	0.16	0.36	0.25	0.43	0.20	0.40
VSHS	0.14	0.35	0.20	0.40	0.13	0.34	0.16	0.37	0.14	0.35	0.12	0.33
DIPI-II	0.01	0.11	0.02	0.13	0.02	0.13	0.04	0.20	0.03	0.17	0.09	0.28
DIPIII	0.03	0.17	0.03	0.17	0.03	0.16	0.04	0.20	0.03	0.16	0.06	0.25
UNI	0.04	0.19	0.02	0.15	0.06	0.24	0.07	0.26	0.13	0.33	0.18	0.38
Urban	0.61	0.49	0.58	0.49	0.58	0.49	0.61	0.49	0.57	0.49	0.63	0.48
Married					0.73	0.45	0.54	0.50	0.73	0.45	0.60	0.49
HMA10	4.48	2.16	4.62	2.21	3.81	1.72	3.97	1.79	3.81	1.67	3.96	1.87
HMB10	1.15	1.19	0.90	1.07	0.86	0.93	0.68	0.87	0.87	0.93	0.73	0.88
EXP	20.45	11.61	16.75	11.97	19.58	11.46	17.01	11.97	8.22	8.77	7.02	8.35
EXPSQ	553.14	566.82	423.66	544.16	514.87	541.50	432.38	540.43	144.55	296.01	119.09	282.31
Sample Size	22,779		9,649		18,414		8,599		80,411		42,402	

Source: BPS (1989, 1999, 2009)

Women's involvement in and influence on various industries are progressing. Since more opportunities have become available for women to work in multiple fields of jobs, they have treated this access as means either of increasing family income or of enhancing their self-esteem. In the case of Indonesia, women's roles in various types of industry such as agriculture, manufacturing, or wholesale have tended to increase during the last three decades.

Table 8. 2: Main Industries by Gender, 1989-2009.

Main Industry	1989		1999		2009	
	Male	female	Male	female	Male	female
Agriculture, Hunting, Forestry and Fishing	13.36	19.45	15.20	18.30	15.13	9.11
Mining and Quarrying	1.91	0.29	2.00	0.40	3.75	0.43
Manufacturing	17.41	20.44	18.50	22.20	14.60	16.94
Electricity, Gas and Water	0.85	0.09	0.80	0.10	1.05	0.27
Construction	10.56	0.50	12.70	1.30	9.87	0.59
Wholesale and Retail Trade and Restaurants and Hotels	5.51	7.72	8.60	11.20	9.00	11.33
Transport, Storage and Communication	7.26	0.52	6.90	1.00	7.63	2.16
Financing, Insurance, Real Estate and Business Services	2.29	1.55	2.10	1.80	3.56	2.97
Community, Social and Personal Services	40.76	49.68	33.20	43.70	35.40	56.20

Source: BPS (1989, 1999, 2009)

The male-female differential in hourly earnings varies considerably across industries. Analysis of this variation may help to shed light on the differential itself. Table 8.2 compares the male and female labour force in nine industries in the Indonesian labour market. In the years 1989 and 1999, for instance, the percentage of female workers in agriculture, hunting, forestry, and fishing sectors was nearly 20 per cent, while the proportion of male workers was about 13-15 per cent. Within these domains of work, female workers dominate in the agricultural sector; working in rice fields is related to women's domestic responsibilities to ensure that their family members have sufficient food. This phenomenon can certainly be found in West or North Sumatera provinces where women have a more pivotal role in managing their family farms than men. This is

an enduring type of culture and has been ingrained for generations. Interestingly, the percentage of female workers in the agriculture sector had dropped to 9 per cent in ten years later in 2009. The onset of the new millennium may have shifted the female workers paradigm towards agricultural sectors such as working as farmers or rubber tappers. Women's traditional characterization as agricultural labourers may have changed to one of formal sector workers. Apparently, this attribution is becoming more superficial due to female workers' demands for professionalism and formal work zones. Nonetheless, the influence of feminists and policy-makers is also largely involved in broadening women's access within this sector by determines regulations that benefit female workers. The first important labour market regulation was minimum wage legislation which had been introduced from the early 1970s (Carpio et al. 2012). Government insurance fund agency, known as *Asuransi Sosial Tenaga Kerja* (ASTEK) had been set up in 1977. In 1992, it introduced a basic law on Worker Social Security (WSS)[23], which made it compulsory for all employers to participate in a national programme. All employed persons (including the self employed) and their families are entitled to join, The law covers life insurance, retirement benefits, free health care for workers and workers compensation (Manning, 1997b).

Table 8.2 shows that mining and quarrying, electricity, gas and water, and the construction and transport sectors are all dominated by male workers. The significant proportion of male workers, rather than female workers, is largely due to the nature of these industries, which require a high level of energy and strength. In addition, the social context of this type of work as "men's jobs" may also contribute to the fact that it is taboo for women to enter those industries.

[23] *Jaminan Sosial Tenaga Kerja* (Jamsostek)

However, women's contribution to manufacturing and community, social and personal services sectors represented a greater proportion at 20 per cent to 50 per cent compared to male workers at only 17 per cent to 40 per cent. Most of the giant manufacturing businesses in Indonesia are soft skill-based. Traditional herb and cigarette businesses are examples of soft skill-based industries which mostly run by women. Women are believed to possess soft skills, which means they are able to handle delicate work carefully and patiently; this may explain these industries' preference for hiring women rather than men. This insight also applies to community or service industries where women are more trusted than men.

Table 8. 3: Main Occupation by Gender, 1999-2009.

Main Occupation	1999			2009		
	Male	Female	Total	Male	Female	Total
Professional, technical and related workers	2.3	2.21	4.5	2.7	2.7	5.4
Administrative and managerial workers	0.3	0.1	0.3	0.8	0.2	1.0
Clerical and related workers	4.1	1.8	5.9	2.5	1.9	4.4
Sales workers	10.0	11.0	21.0	9.8	10.7	20.5
Service workers	2.7	2.5	5.2	3.1	2.9	6.0
Agricultural workers	29.9	18.4	48.3	27.7	16.3	44.0
Production workers, operators and labourers	20.1	6.7	26.8	22.3	7.4	29.7
Others	0.4	0.0	0.4	0.5	0.0	0.5

Source: BPS (1999, 2009)

In the job category reports, only two single-year periods are included, as the data for 1989 did not provide any information on type of occupation. Table 8.3 shows the differences in employment patterns between men and women in Indonesia. The Table also shows that large percentages of men and women are employed in agriculture. This is consistent with the status of Indonesia as an agricultural country. The second most female-dominated type of job is that of sales workers, followed by unskilled labourers.

The data show that there has been a significant increase in female workers in professional, technical and related work. The share of female workers in professional jobs increased from 2.21 per cent in 1999 to 2.7 per cent in 2009 and in service jobs from 2.5 per cent to 2.9 per cent.

8.5 Decomposition of Earnings Differentials

The detailed decomposition results on earnings differentials based on the Oaxaca-Blinder technique are shown in the following tables. From this decomposition analysis, we can determine the total male-female wage differential as individual characteristics (explained) and the discrimination (unexplained) component. This analysis may also explain whether the determinants are due to observed characteristics or endowment factors or to unobserved characteristics or discrimination factors. The model consists of variables to measure a set of dummy variables indicating level of education, ranging from no schooling to university level, dummy variables for marital status and living location, number of household members aged over ten (HMA10), number of household members aged under ten (HMB10), and working experience and its square.

The decomposition results show that the most fundamental difference is caused by unobserved variables. Among unobserved variables are the culture, work ethics, government regulations, trade union membership, the type of job and other factors that may produce earnings disparities in Indonesia. In addition, the practice of gender discrimination in the labour market also affects earnings differences.

The decomposition figures in Table 8.4 show that discrimination and human capital factors were leading causes of the gender wage gap in 1989. The pattern in this Table tends to conform to conventional notions that female employees earn lower wages than male workers. As these figures show, the gross of log hourly wage differential

between male and female workers was 0.495 log points. This differential was partly due to endowment factors (35.1 per cent), however it was mainly due to unobserved factors (64.9 percent). The percentage figures are obtained by dividing results in the endowment effect and discrimination effect by the hourly wage gap and then multiplying the resulting ratios by 100.

Table 8. 4: Decomposition of Log Earning Differentials, 1989.

Variable	Log hourly wage gap $Ln\overline{W}_m - Ln\overline{W}_f$	%	Endowment Effect $\beta_m(\bar{X}_m - \bar{X}_f)$	Std. Error	%	Discrimination Effect $\bar{X}_f(\beta_m - \beta_f)$	Std. Error	%
INTERCEPT	0.322	65.0	0.000	0.000	0.0	0.322	0.030	65.0
NS	0.028	5.6	0.024	0.002	4.8	0.004**	0.004	0.7
SUB-PRIM	0.019	3.9	0.010	0.001	2.0	0.009*	0.004	1.9
JHS	0.014	2.8	0.030	0.002	6.0	-0.015	0.002	-3.1
VJHS	0.007	1.4	0.011	0.001	2.2	-0.004	0.001	-0.8
SHS	-0.006	-1.3	0.040	0.004	8.1	-0.047	0.003	-9.4
VSHS	-0.147	-29.7	-0.060	0.005	-12.2	-0.087	0.005	-17.6
DIPI-II	-0.017	-3.4	-0.008	0.002	-1.7	-0.008	0.001	-1.7
DIPIII	-0.017	-3.4	-0.002**	0.003	-0.5	-0.015	0.002	-2.9
UNI	0.012	2.4	0.023	0.003	4.7	-0.011	0.001	-2.3
URBAN	0.069	14.0	0.000**	0.000	-0.1	0.070	0.009	14.1
HMA10	0.074	14.9	0.001**	0.000	0.3	0.072	0.015	14.6
HMB10	-0.005	-1.0	0.005	0.001	1.1	-0.011	0.006	-2.1
EXP	0.246	49.7	0.217	0.011	43.9	0.029	0.036	5.8
EXPSQ	-0.103	-20.8	-0.117	0.008	-23.6	0.014	0.020	2.8
Total	0.495	100	0.174		35.1	0.322		64.9

Note: (i) all coefficients are statistically significant at 1 per cent level unless indicated otherwise;
(ii) * significant at 5 per cent level; ** not statistically significant.

The source of the wage differential can be obtained from explained and unexplained components that show a positive sign in total. A positive sign indicates an advantage for males, while a negative sign indicates an advantage for females. The positive sign in explanatory variables as a whole indicates that male workers have greater productivity endowment than females. The breakdown shows that male employees tend

to be more educated at lower secondary and no schooling levels whereas female employees are more educated in vocational senior high school and tertiary education.

Although the discrimination effect accounts for 64.9 per cent, the sign and magnitudes for discrimination effects are more varied. Foremost among the factors contributing to the discrimination effect is the unexplained portion ($U = \beta_m - \beta_f$) which accounts for 65 per cent. Blinder (1973) states that the main way in which female employees are discriminated against in labour markets is not in terms of rates of pay but by being transferred to lower positions on the occupational level than those for which they are qualified. Aside from the unexplained portion, other important factors favouring males are no schooling, sub-primary education, number of household members over ten year old, number of household members under ten and working experience.

The negative sign in the discrimination effect on the majority level of education variables indicates that the related variables contribute to an equalising role between male and female employees. Starting from junior high school (JHS) to university level indicates that the return to education is higher for women than for men. This results is confirmed with study by Madden and Chiu that women earn higher skill premium than male employees (Madden and Chiu, 1990).

The residential location and workplace has become a key issue in current urban economic theory (Straszheim, 1987). This issue has become more important to those individuals who reside in big cities. Although Indonesia is dominated by rural areas rather than urban areas, the urban variable turns out to be essential since many formal jobs are located in the cities. The finding shows that living and working in urban areas is of more benefit to male employee than to female employees, by 14 per cent in total. Interestingly, this result runs in the opposite direction to the endowment and discrimination factors. The endowment effect is shown to be in favour of female employee by 0.1 per cent while the discrimination effect favours male employees by 14.1 per cent.

Apart from urban location, another factor favouring males is having children aged over ten. This impact mostly comes from the discrimination effect against female employees by 14.6 per cent. The total impact on the wage gap between males and females from having adults in the family is slightly added by the endowment effect, which favours males by 0.3 per cent. Having children in the family may result in reducing gender wage gap slightly which mostly come from discrimination effect by 2.1 per cent. However, endowment effect shows females are disadvantaged by having children, with males earning 1.1 per cent more than female employees.

As predicted, male workers have superior working experience due to both effects, namely the endowment and discrimination effects. The total amount contributed by working experience to the wage gap is quite large at 49.7 per cent. Both endowment and discrimination effects account for a large proportion of the wage gap at 43.9 per cent and 5.8 per cent respectively.

Table 8.5 shows a different set of decomposition results for 1999. The raw earnings differential (E+C+U) was 0.320 log points. The estimated percentage on endowment effects (E) accounts for a 26.6 per cent advantage for male employees, with 73.4 per cent attributable to discrimination (C+U). Breaking down the 73.4 per cent attributable to coefficients shows that they mainly come from an unexplained shift in the coefficients by 118.4 per cent.

Table 8. 5: Decomposition of Log Earning Differentials, 1999.

Variable	Log hourly wage gap $Ln\bar{W}_m - Ln\bar{W}_f$	%	Endowment Effect $\beta_m(\bar{X}_m - \bar{X}_f)$	Std. Error	%	Discrimination Effect $\bar{X}_f(\beta_m - \beta_f)$	Std. Error	%
INTERCEPT	0.379	118.4	0.000	0.000	0.0	0.379	0.035	118.4
NS	0.007	2.3	0.008	0.001	2.5	-0.001**	0.003	-0.2
SUB-PRIM	0.013	4.1	0.007	0.001	2.0	0.007*	0.004	2.0
JHS	0.006	1.8	0.018	0.002	5.8	-0.013	0.003	-4.0
VJHS	0.004	1.2	0.006	0.001	1.8	-0.002*	0.001	-0.6
SHS	0.005	1.7	0.049	0.004	15.4	-0.044	0.004	-13.7
VSHS	-0.090	-28.1	-0.029	0.005	-8.9	-0.061	0.004	-19.2
DIPI_II	-0.044	-13.6	-0.031	0.003	-9.7	-0.013	0.002	-3.9
DIPIII	-0.035	-11.1	-0.020	0.003	-6.1	-0.016	0.002	-5.0
UNI	-0.032	-10.1	-0.010	0.005	-3.0	-0.023	0.003	-7.1
URBAN	0.044	13.6	0.000**	0.000	0.2	0.043	0.010	13.5
MARRIED	0.008	2.7	0.016	0.003	5.0	-0.008*	0.012	-2.4
HMA10	0.019	6.0	0.001**	0.001	0.3	0.018**	0.018	5.7
HMB10	-0.003	-1.1	0.001**	0.001	0.3	-0.004**	0.006	-1.4
EXP	0.080	24.9	0.130	0.010	40.5	-0.050**	0.047	-15.6
EXPSQ	-0.040	-12.6	-0.062	0.007	-19.4	0.022**	0.025	6.8
Total	0.320	100	0.085		26.6	0.235		73.4

Note: (i) all coefficients are statistically significant at 1 per cent level unless indicated otherwise;
(ii) * significant at 5 per cent level; ** not statistically significant.

The results show that the largest part of the differential is accounted for by the unexplained portion. The unexplained portion or unobserved variables in Indonesia may refer to working and social culture, work efforts, government regulations, and types of occupation, and natural resources, all of which are possible factors in determining earnings disparities. Papanek and Schwede (1988) argued that a variety of historical, structural a demographic factors affected the economics roles of women in Indonesia.

The detailed analysis of the source of the wage differential shows that the lower levels of education are favouring male workers, while the higher level of education, location and household characteristics are favouring female workers in the both endowment and discrimination effect. Vocational junior high school and work experience show a positive sign, where male workers have a superior endowment effect. This result indicates that male workers have more productivity endowment than female workers.

The levels of education contributing to the male wage advantage are no schooling' and sub-primary education. This finding is due to the fact that males have more physical strength, which allows them to gain a higher rate of return without the requirement for a higher level of education. Meanwhile, females enjoy a higher rate of return from vocational senior high school education and tertiary education.

The sign and magnitude for the discrimination effect show opposite results, especially for education variables. That is to say, female workers earn higher rates of return from all levels of education. Male workers have the benefit of higher rates of return from sub-primary education.

The residential location and workplace of workers depends on their willingness to commute. White (1986) divides commuting journeys for urban workers into two perspectives. Urban economists view workers as having fixed job locations in city centres and as being compensated for longer commuting journeys by lower housing prices in the suburbs (White, 1986). In contrast, labour economists tend to view workers as having fixed residential locations and being compensated for longer commuting journeys by higher wages in more distant jobs. Table 8.5 shows that the urban variable is favouring males over females. This finding implies that male earn 13.6 per cent more than females workers from living in urban areas.

Furthermore, married male employees demonstrate a superior endowment effect to married female employees, by 5 per cent. However, the discrimination effect are reducing wage gap by 2.4 per cent in favouring female employees. The total wage gap shows that male workers benefit from being married by 2.7 per cent. This finding is consistent with studies by Hill (1979) and Ahituv and Lerman (2007), which indicate a strong positive effect of marriage on male workers' wages.

In 2009, the sample data were much bigger than in 1989 and 1999, consisting of 80,411 male sample data and 42,517 female sample data. Table 8.7 shows that the return to education for females has increased considerably, while the average earnings gap is also narrower between male and female employees. This finding is in line with empirical

studies on the gender pay gap in Vietnam, where the gender pay gap tends to display a modest decrease across wage distribution (Pham and Reilly, 2006). These results indicate that education plays an important role in reducing the earnings gap. Compared to the previous period, there are some changes in both endowment and discrimination effect. The endowment effect changes to a negative sign, meaning that female employees are more educated than before. However, in terms of discrimination effect, female employees faced more discrimination than before overall, although the log hourly wage gap between males and females was smaller than in the previous period.

Apparently, Table 8.6 indicates that the independent variables account for 0.218 log points in favour of males due to observed characteristics (endowment factors) and unobserved characteristics. Interestingly, the endowment effect indicates that females earn more than males by 14.5 per cent. The amount attributed to coefficients is 114.5 per cent, which is a huge percentage is attributed to the discrimination effect. Much of the impact on the earnings differential between males and females comes from the unexplained portion $(U = \beta_m - \beta_f)$, while differences in personal characteristics can be attributed to the effect of education, marital status and working experience.

Education is among the most important factors contributing to the female employees wage advantage, and the breakdown shows that female employees are more highly educated than male employees. This is consistent with data from the national labour force survey in 1999 and 2009; as shown in Table 8.1, the average level of education achieved by female employees especially at tertiary education is higher for female employees than for male employee. It is thought that females' higher level of education allows them to be decision-makers in the household as well as in the public services, politics and business. Although the percentage of female employees who attended high school is lower than that of male employee, the percentage is increasing continuously (BPS, Sakernas 1989-2009).

As shown, in the previous period the urban variable favours males over females, and both the endowment and discrimination effects are highly significant in explaining the returns to urban location are higher for males than for female workers. Table 8.6 show that the discrimination effect mostly contributes to male advantage by 4.38 per cent compared to the endowment effect, which contributes only 0.19 per cent. This high percentage from the coefficient factor is due to the fact that male employees are benefiting from living in urban areas, which means shorter journeys to the workplace. Therefore, residential location does represent a gender discrimination against female employees; rather, it is an advantage for male workers. Madden and Chiu (1990) found that the cause of the gender wage gap was not spatial mobility; rather, it had to arise from other choices made by workers, households and firms.

Table 8. 6: Decomposition of Log Earning Differentials, 2009.

Variable	Log hourly wage gap $Ln\bar{W}_m - Ln\bar{W}_f$	%	Endowment Effect $\beta_m(\bar{X}_m - \bar{X}_f)$	Std. Error	%	Discrimination Effect $\bar{X}_f(\beta_m - \beta_f)$	Std. Error	%
INTERCEPT	0.558	256	0.000	0.000	0.00	0.558	0.018	255.70
NS	0.000	0.0	0.001**	0.000	0.39	-0.001**	0.001	-0.41
SUB-PRIM	-0.002	-0.8	0.000**	0.000	-0.12	-0.001**	0.001	-0.68
JHS	-0.002	-1.0	0.011	0.001	4.99	-0.013	0.002	-6.00
VJHS	0.001	0.5	0.003	0.000	1.23	-0.002*	0.000	-0.71
SHS	-0.011	-4.9	0.029	0.002	13.50	-0.040	0.003	-18.40
VSHS	-0.022	-10.1	0.016	0.002	7.36	-0.038	0.002	-17.49
DIPI_II	-0.075	-34.2	-0.057	0.002	-26.25	-0.017	0.002	-7.98
DIPIII	-0.057	-26.1	-0.042	0.002	-19.25	-0.015	0.002	-6.85
UNI	-0.104	-47.6	-0.067	0.003	-30.77	-0.037	0.003	-16.86
URBAN	0.010	4.6	0.000**	0.000	0.19	0.010	0.006	4.38
MARRIED	0.047	21.7	0.025	0.001	11.39	0.022	0.006	10.28
HMA10	-0.055	-25.0	0.000**	0.000	-0.22	-0.054	0.010	-24.79
HMB10	-0.006	-2.7	0.001**	0.001	0.35	-0.007	0.004	-3.05
EXP	-0.082	-37.4	0.065	0.003	29.69	-0.147	0.008	-67.14
EXPSQ	0.016	7.5	-0.015	0.001	-6.99	0.032	0.004	14.52
Total	0.218	100	-0.032		-14.5	0.250		114.5

Note: (i) all coefficients are statistically significant at 1 per cent level unless indicated otherwise;
(ii) * significant at 5 per cent level; ** not statistically significant.

Another observed productive characteristic that produces the wage gap between female and male employees is working experience. As show in previous table, table 8.6 shows that 29.6 per cent of working experience contributed to wage gap, female employees typically have less work experience than male workers. In contrast, working experience contributed significantly to reduce gender discrimination by 67.4 percent. Even though the 1945 Indonesian Constitution has given equal opportunities between female employees and male workers to participate in the labour market. However, Indonesian female employees are always associated with household chores such as cooking, sewing, raising children, and looking after husbands and parents. On the other hand, female employees who work still face discrimination in terms of job placement and wages. To overcome this issue, a number of regulations were devised by the government in favour of female employees. For example, in Law no. 10.2008 on general elections, article 53 states that political parties must ensure that female employees account for at least 30 percent of the list of parliamentary candidates (United Nations Development Programme Indonesia, 2010).

The wage gap between males and females in Indonesia tended to decrease from 1989 to 2009. This result is consistent with findings from several countries showing that the gender earnings differential has narrowed over time. One study in Pakistan by Ashraf (1993) found that the male-female earnings differential had dropped from 63 per cent in 1979 to 33 per cent in 1985-86. Nor (1997), studying the Malaysian labour market, found that the gender wage gap still existed in Peninsular Malaysia, but had reduced gradually during the period 1977-1988. Empirical findings for Thailand show that the education of females was the major source of the narrowing of the gender earnings gap during the period 1985-2005. Although the gender earnings gap still exists in Thailand, the results of this study suggest that females are in a far better position than they used to be in two decades ago.

Nopo et al. (2011) studied the gender wage gap in East Asia and the Pacific; they found that the impact of economic liberalization policies of 1986 did not have an important effect on reducing the gender wage gap. Further, they found that the overall wage gap has narrowed mainly in terms of gender differences in characteristics. However, the unexplained component of the wage gap has not. This finding confirms that the gender earnings differential in Indonesia is mainly caused by the unexplained portion or the discrimination effect.

As it mentioned in previous discussion that gender discrimination takes in many forms. Many social practices seen as normal from a religious or cultural point of view which prohibit women from paid labour force. This gender discrimination may have profound of economic consequences in economic growth and social welfare. Gender discrimination against women in the labour market may reduce the available of human capital in an economy, which has macroeconomics effects; in particular, it may reduce the rate of economic growth (Klasen, 1999). Gender inequality in education and access to resources may affect women's productivity, fertility and mortality outcomes, and an expansion of education of the next generation (Buvinic et al, 2009, Hill and King, 1995).

Table 8.5 and 8.6 shows that in recent years, income disparity between male workers and female employees has declined from 0.320 log points in 1999 to 0.218 log points in 2009, although female employees on average have shorter working hours than male workers. More female employees now work continuously throughout their lives although they tend to have less work experience than male workers, while others have almost the same characteristics, and this becomes an important factor in explaining gender differences in earnings.

One of the most dramatic economic changes in the twentieth century was the increase in married women's participation in work roles outside the home. Regardless of

cultural region, late industrialization drew more married women into the labour force. Women's economic participation is commonly explained by the independent effect of key labour supply and demand factors as well as the intersection of supply and demand. Women's educational levels, their marriage and fertility patterns, life expectancies and household structure are central to the labour supply conditions affecting the decision to enter and remain in the labour force. For example, in highly industrialized societies with large non-manufacturing sectors and diverse types of white collar employment in sales and services, women can take advantage of these employment opportunities if their education levels do not lag far behind men's.

Increased human capital in both education and work experience generally makes women more attractive employees and raises their potential wage rate, pulling more women into the labour market. Marriage remains an almost universal event in the lives of women in Indonesia, and more than 55 per cent of female employees in the Indonesian labour force in 1999 and 2009 were married women (Sakernas 1999 and 2009).

Other factors have helped to reduce gender discrimination in recent years. First, economic growth has provided new employment opportunities to increase output; therefore, the participation of women in employment has increased significantly and the increase in the number of female workers has led to competition among female and male job seekers. A second factor that conveys information on the reduced wage discrimination in 2009 compared to 1989 is a social mobility or behaviour change by female workers.

Awareness of educational opportunities leading to increased school enrolment of the female labour force can help to reduce wage discrimination. This is especially true for women because the female labour supply will increase, and therefore more women will work in higher-paid jobs. Female workers might find it advantageous when a larger proportion of school enrolment produces higher educational attainment. Female educational attainment affects the gender pay gap in two ways. First, the gender earnings

gap is expected to decrease as a result of larger female earnings. Second, more schooling instigates higher labour force participation. One major factor contributing to the increased female labour force participation in Indonesia is women's educational attainment; thus, the higher the level of women's education relative to men, the higher their wages and the lower the earnings gap.

External factors or globalization also reduce the gender wage gap. Globalization encompasses dynamic processes and has an impact on local labour markets – on employment structures and relationships, wages and working conditions, opportunities for women and men and their labour force participation. Globalization has given countries access to a bigger workforce across the world (Dejardin, 2008). This study has found that the occupational gender wage gap tends to decrease with increasing economic development, at least in richer countries, and to decrease with trade and foreign direct investment (FDI) in richer countries, but finds little evidence that trade and FDI also reduce the occupational gender wage gap in poorer countries (Oostendorp, 2009).

The final factor is government policy on equal employment opportunity (EEO). The government of Indonesia's role in preventing and eliminating discrimination in employment has been to set up Act number 80 of 1957 on the Ratification of the International Labour Organization (ILO) Convention number 100 concerning Equal Remuneration for Work, and Act number 21 of 1999 on Ratification of ILO Convention number 111 on Discrimination in Employment and Occupation. The consequences of the ratification mean that the Government must implement all the provisions of the Convention through national legislation, as well as seek enforcement of any violation of the Laws. To realize those conventions, the Government of Indonesia has enacted Law number 13 of 2003 on Employment, through the provisions of Articles 5 and 6. The provisions form a legal basis for equal rights and the elimination of discrimination in employment (Ministry of Manpower report). In essence, this law declares that it is illegal

for employers to create or maintain differences in wages between men and women who have similar jobs. Equal pay is required for similar jobs; equal jobs require the same level of education, effort and responsibility.

The earnings equalities between men and women have improved with the increasing female labour force participation since the 1960s. The percentage of female workers in Indonesia increased from 49 per cent in 2004 to 51 per cent in 2008 (Statistics Indonesia). The female labour force participation has increased sharply since changes in social attitudes and demography, and technological improvements in home appliances. The great increase in the female labour force in the Indonesian labour market after the 1960s has clearly produced changes in attitude. Many married women have become more accepted in the job market in Indonesia. For example, the married women's labour force has increased slightly from 55 per cent in 1999 to 58 per cent in 2009 (Statistics Indonesia). Technological improvement in certain consumer products is also an important factor in increasing women's labour force participation. Better and newer appliances and products have increased productivity in the home. Changes in technology along with the tendency to prefer smaller families have enabled married women to spend more time working in the job market.

8.6 Conclusion

This chapter has explained the gender discrimination and earnings differential in the Indonesian labour market. Overall, this gender discrimination and earnings differential has narrowed the wage gap mainly in gender characteristics such as education. Meanwhile, the unexplained component or unobserved variables have not changed. Work and social culture, work efforts, government regulations, types of occupations and geographic location are among the unexplained components contributing to gender disparities in earnings.

The perspective on female workers' roles has evolved from the development of the Indonesian labour force. This evolution has improved women's acceptability and their access to various job markets. Over the last three decades, social attitudes towards female workers have changed, largely due to schooling and national laws.

Women have been mainly associated with domestic responsibilities such as taking care of children and husbands, washing, and cooking. However, the provision of more schooling opportunities has had a great impact on social perspectives of women's contribution to the labour market. The trend of female workforce progression from 1989 to 2009 has demonstrated the increasing participation of women in all types of jobs. In addition, with the availability of supportive regulations that forbid wage differentials, statistical analysis of the Indonesian case has revealed that female workers have gained higher incomes than male workers.

Furthermore, regional decentralization has led to a major shift in responsibility for the issue of the labour market in Indonesia. The role of central government is now more focused on efforts to provide guidance, facilitation and technical assistance rather than providing instruction or supervision. The role of central government is related to that of the governors at the provincial level but this role does not include lines of responsibility at the district level. In the following chapter, we provide an overview and analysis of the regional gender discrimination and earnings differential.

CHAPTER 9
REGIONAL GENDER DISCRIMINATION AND EARNINGS DIFFERENTIALS

9.1 Introduction

The purpose of this chapter is to estimate and present the decomposition of gender earnings differential and discrimination across regions in the country. This, therefore, will help to identify the variables responsible for earnings differential and discrimination for each gender group. A dataset from National Labour Force Survey (SAKERNAS, 2009) is employed to obtain this objective.

The chapter is organised as follows, section 9.2 to 9.8 shows the breakdown of gender discrimination and earnings differences which presents and examines the decomposition gender earnings in each regions in Indonesia. At this point we should be able to identify the extent to which gender earnings differential and discrimination exist in Indonesia labour market. All of these will be summarise in section 9.9, under the overview of the regional earnings differences within region in Indonesia.

Prior to concluding the chapter, recognition on ethnicity and religion is given in this analysis. The aims to introduce these two variables is to depict the unobserved factor which perhaps may explain earnings differentials and discrimination in each region in Indonesia.

9.2 Gender Discrimination and Earnings Differential in Sumatera

Table 9.1 presents the decomposition of wage differentials between males and females in the Sumatera region. The total wage gap between male and female employees is 0.076 log points. The source of the wage gap is mainly the discrimination effect which contributed up to 213 per cent. Conversely, the endowment factors favour female employees by 113 per cent; that is to say, female employees are more educated and more productive in the labour market.

Table 9. 1: Earnings Differential in Sumatera.

Variable	Log hourly wage gap $Ln\overline{W}_m - Ln\overline{W}_f$	%	Endowment Effect $\beta_m(\bar{X}_m - \bar{X}_f)$	Std. Error	%	Discrimination Effect $\bar{X}_f(\beta_m - \beta_f)$	Std. Error	%
INTERCEPT	0.458	600	0.000	0.000	0.0	0.458	0.035	600
NS	-0.001	-1.5	0.000**	0.000	0.2	-0.001**	0.001	-1.7
SUB-PRIM	0.000	0.0	-0.002*	0.001	-2.2	0.002	0.003	2.2
JHS	0.007	8.6	0.014	0.002	18.4	-0.008	0.003	-9.9
VJHS	0.002	2.3	0.003	0.001	4.4	-0.002	0.001	-2.1
SHS	-0.024	-317	0.024	0.003	31.3	-0.048	0.006	-63.0
VSHS	-0.042	-54.4	0.001**	0.003	0.8	-0.042	0.004	-55.2
DIPI-II	-0.103	-134.8	-0.076	0.004	-99.7	-0.027	0.005	-35.1
DIPIII	-0.072	-94.1	-0.052	0.003	-67.6	-0.020	0.004	-26.4
UNI	-0.125	-163.9	-0.087	0.005	-114.0	-0.038	0.006	-49.9
URBAN	-0.017	-22.8	-0.002*	0.001	-3.3	-0.015	0.009	-19.5
MARRIED	0.010	13.7	0.030	0.002	39.2	-0.019*	0.011	-25.5
HMA10	-0.083	-108.7	-0.001**	0.001	-1.7	-0.082	0.017	-106.9
HMB10	-0.009	-12.4	-0.001**	0.001	-1.2	-0.009**	0.006	-11.2
EXP	-0.149	-195.7	0.037	0.005	47.9	-0.186	0.017	-243.6
EXPSQ	0.037	49.1	-0.007	0.002	-8.9	0.044	0.010	58.0
MIN	-0.005	-5.9	-0.006*	0.003	-8.4	0.002*	0.001	2.4
MAN	0.004	5.3	0.000**	0.000	-0.1	0.004**	0.003	5.4
UTIL	0.002	2.5	0.002*	0.001	2.0	0.000**	0.000	0.4
CONS	0.003	4.2	0.003**	0.010	4.0	0.000**	0.000	0.2
TRADE	0.020	26.0	0.006	0.001	7.6	0.014	0.003	18.4
TRANS	-0.001	-1.6	-0.003**	0.003	-4.3	0.002*	0.001	2.7
FINC	0.003	4.1	0.000**	0.000	0.0	0.003	0.001	4.1
SERV	0.161	211.2	0.032	0.007	42.1	0.129	0.017	169.1
Total	0.076	100	-0.086		-113	0.163		213

Note: (i) all coefficients are statistically significant at 1 per cent level unless indicated otherwise;
(ii) * significant at 5 per cent level; ** not statistically significant.

The details of the decomposition show that the endowment effects contribute to lowering the gender gap by 113 per cent. Education variables, especially those contributing to a greater percentage to favour female employees, are statistically

significant in explaining gender wage gap in Sumatera. However, the factors of no schooling, and having children are not significant. Those variables that are not significant only contribute a small percentage in explaining the gender wage gap in Sumatera.

Female employees with more years of education, such as holding diploma and Bachelor's degrees, are the main contributors to the narrowing of the gender gap, by 99.7 and 114 per cent respectively. Conversely, table 9.1 also indicates that about 31.3 per cent of secondary education, 39.2 percent of being married and 47.9 per cent of working experience are widening the gender earnings gap in the endowment effect.

A large portion of gender discrimination is attributed to the intercept, being married and the decreasing rate of return to experience. All levels of education, living in an urban area, having adults and children in the household, and the role of working experience, on the other hand, have been the factors reducing the gender discrimination. Among the education variables, only vocational junior high school could not explain gender discrimination. Having adults in the household has reduced the discrimination effect against female employees; this condition could benefit female workers by gaining more work experience and being more productive at the workplace.

Next, findings from Sumatera region show that the schooling factor along with household members and work experience variables resulted in a negative coefficient towards the gender wage gap. This implies that schooling is the pivotal determinant for females to reduce the earnings differential and wage discrimination in this region. Female employees' education contributed to closing the gender wage gap. Along with rapid economic growth, it has reduced the discrimination effect against educated female employees. Almost all levels of education, especially higher education, have resulted in female employees gaining higher earnings than male workers. This is as expected from the increase in female education and participation in the labour market. Other factors such

as education, household characteristics and working experience contributed to narrowing the gender gap.

The major sources of male-female earnings differential in Sumatera region are unobserved variables which could come from type of job, culture, religion and work ethic. Data from the 2009 National Labour Force Survey as shown in table 9.1 indicate that the majority of the Indonesian labour force including women work in the agricultural sector at around 41.61 million out of the 104.87 million labour force.

According to Statistics Indonesia (2012), 37.35 million women aged over 15 years are working in the household in unpaid jobs and many other women work as housewives. Alisjahbana (2002) defines the informal sector as including all self-employed and family workers as well as casual wage employees, making up 92 per cent of agricultural employment and 52 per cent of non-agricultural employment, and over 70 per cent of the total workforce was employed in this sector. Even though a large number of female workers participate in the paid labour market, many women, especially in the rural areas, still work in the informal sector, scattered throughout villages, small towns and the slums of many large cities (Robinson, 2009).

As in other regions, Sumatera mainly depends on the agriculture and plantation sector. The plantation industry started in the early 20th century, mostly in lowland areas; the highlands are used for the cultivation of fine Arabica coffee, so Sumatera is also known as the largest producer of Indonesian coffee. Processing remains the basis of manufacturing activity in Sumatera. Agricultural produce, notably palm oil, rubber and mineral production provides the basis of the secondary sector. Since the 1970s, the petroleum industry with its associated activities has become the most valuable extractive industry in this region. Table 9.1 shows that mining industry is statistically significant in reducing hourly wage gap between male and female employees by 5.9 per cent that is mostly come in from endowment effect. Meanwhile, the manufacturing sector contribute

5.3 per cent in favouring males over females. The trade sector is a growing industry in this region, and the Strait of Malacca is important for international trade routes, meaning that the Sumatera region is strategically located. The discrimination effect from trade category mostly contributes to males' advantage by 18.4 per cent. According to table 5.11, a majority of all employees rely on the public sector, service sector which is included community, social and personal services significantly widening wage gap by 35.4 per cent.

Individuals in Sumatera region are divided into many different ethnic groups, speaking around 52 different languages. Ethnic Malays dominate most of the eastern coast, while people in the southern and central interior speak languages related to Malay. Sumatera region was heavily influenced by Hindu and Buddhist cultures which spread from India in the 12th century. However, nowadays, most people in Sumatera are Muslims (87 percent), followed by Christians (10 percent) and other small communities of Buddhists (2 percent) and Hindus (1 percent) (Brown, 2009). Many observers claim that religion made women's status lower than men's. However, studies by Ross (2008) and Krivenko (2009) found that gender inequalities in the Muslim community have little to do with Islam. In some cases, *adat* or customary laws often take precedence over Islamic rules (Rammohan and Johar, 2009) such as in West Sumatera (Kahn, 1980). The type of job is not tested here, however, it is believe that the types of job and cultural tradition have greater impacts on female employees' earnings differential in Sumatera. In Toba Batak society in North Sumatera, descent is through men and, under customary law, daughters do not share in the inheritance from their fathers (Rodenburg, 2000). Meanwhile, in West Sumatera, women continue to be pivotal within the domestic and kin structure (Kahn, 1980). The line of descent is continued through women, and usage rights of land and houses are inherited from mothers by daughters (Van Reenen, 2000).

9.3 Gender Discrimination and Earnings Differential in Java

Java region is significantly differently from other regions in Indonesia. Java has been the cultural, political and economic centre of the country. Java contains the republic's capital and largest city, Jakarta, and the second and third largest cities Surabaya (East Java) and Bandung (West Java). The largest port, Tanjung Priok, is also located in Jakarta, while the main cultural centres are the old capitals of Yogyakarta and Surakarta (known as Solo in Central Java), are also located in Java.

Table 9. 2: Earnings Differential in Java.

Variable	Log hourly wage gap $Ln\overline{W}_m - Ln\overline{W}_f$	%	Endowment Effect $\beta_m(\bar{X}_m - \bar{X}_f)$	Std. Error	%	Discrimination Effect $\bar{X}_f(\beta_m - \beta_f)$	Std. Error	%
INTERCEPT	0.169	49.0	0.000	0.000	0.0	0.169	0.037	49.0
NS	0.002	0.5	0.002*	0.001	0.7	-0.001**	0.001	-0.2
SUB-PRIM	0.003	0.9	0.003	0.001	0.7	0.001**	0.002	0.2
JHS	-0.018	-5.2	0.001**	0.001	0.2	-0.019	0.004	-5.4
VJHS	0.000	-0.1	0.002*	0.001	0.7	-0.003	0.001	-0.7
SHS	0.002	0.6	0.031	0.003	8.9	-0.029	0.004	-8.3
VSHS	0.019	5.4	0.046	0.003	13.3	-0.027	0.003	-7.9
DIPI-II	-0.036	-10.5	-0.026	0.002	-7.6	-0.010	0.002	-3.0
DIPIII	-0.040	-11.6	-0.027	0.003	-7.8	-0.013	0.002	-3.8
UNI	-0.070	-20.2	-0.038	0.005	-10.9	-0.032	0.004	-9.4
URBAN	-0.011	-3.1	-0.006	0.001	-1.8	-0.004**	0.013	-1.3
MARRIED	0.090	26.1	0.016	0.002	4.6	0.074	0.010	21.5
HMA10	0.014	4.0	0.000*	0.000	0.1	0.013**	0.017	3.8
HMB10	0.000	0.1	-0.001*	0.001	-0.3	0.001**	0.005	0.4
EXP	0.011	3.2	0.088	0.005	25.4	-0.076	0.011	-22.1
EXPSQ	-0.007	-2.1	-0.020	0.002	-5.9	0.013	0.004	3.8
MIN	0.004	1.2	0.004*	0.002	1.2	0.000**	0.000	0.0
MAN	0.026	7.7	-0.004	0.001	-1.2	0.031	0.010	8.9
UTIL	0.005	1.4	0.005	0.001	1.3	0.000**	0.000	0.1
CONS	0.022	6.3	0.022	0.006	6.3	0.000**	0.000	-0.1
TRADE	0.024	6.9	0.000*	0.000	0.1	0.023	0.004	6.8
TRANS	0.008	2.5	0.005	0.002	1.4	0.004	0.001	1.1
FINC	0.006	1.6	0.005	0.001	1.3	0.001**	0.002	0.3
SERV	0.122	35.4	0.012	0.003	3.5	0.110	0.014	31.8
Total	0.345	100	0.119		34.5	0.226		65.5

Note: (i) all coefficients are statistically significant at 1 per cent level unless indicated otherwise;
(ii) * significant at 5 per cent level; ** not statistically significant.

In regard to the regional earnings differential, the decomposition results in table 9.2 show that the gross gender wage difference is 0.345 log points. 0.119 of 0.345 are

attributed to the endowment effect which is explained by better male characteristics, and 0.226 of the gender wage gap remains unexplained. As a result, 65.5 per cent of gender earnings differential is attributed to the discrimination effect.

Although the majority of the wage gap in Java is also due to the constant term (unobserved variables), the intercept percentage is smaller than in Sumatera. Other factors such as secondary education variables, being married, having adults in the household and work experience also contributed to the gender wage gap. Meanwhile, tertiary education, residing in urban areas and the squared experience term, on the other hand, contributed to closing the gender wage gap. When compared with the Sumatera region, the earnings gap in Java is somewhat higher at .0269 log points. Unobserved factors such as culture, religion, work ethic, the type of work and government regulations contribute up to 49 per cent of the gender wage gap.

Unlike the Sumatera region, the endowment effect (explained portion) favours male over female employees by 34.5 per cent. The most significant aspects for narrowing gender characteristics are tertiary education, living in urban areas, and the squared working experience. However, working experience and secondary education are associated with widening the gender endowment effect. In Java, it is common for young workers to marry at an early age after completion of primary and secondary education. This can be characterized by the small percentage of returns from higher education (10.9 per cent) when compared to the Sumatera region where 114 per cent of female workers benefit from their college education. As with female employees, many male workers in Java prefer to enter the labour market after the completion of basic education; many others prefer to go to vocational schools such as technical schools, which are more male-dominated. This can be seen from the high return of male workers attending vocational schools, which reached 13.3 per cent. Malhotra (1991), using the Asian Marriage Survey (AMS), found that marriage in Java, particularly for women, has traditionally taken place

at a very early age and has been initiated by the parents. The AMS data show a median age at marriage of only 15.6 years for rural women and 17.3 years for urban middle-class women.

Although Islamic culture dominates the Java region, the religion and culture in Java are mixed; the pressure of external influence has been relentless, and the traditional social structure has lost much of its resilience (Geertz, 1973). Many Javanese women are more active in external production and often work in paid employment (Hancock, 2001). Rogers (2005) observed that most of the women in a rural area of Java, particularly in the poorer households, support the family by hiring themselves out for harvesting and other agricultural work. Furthermore, they also provide the most regular portion of household cash income through various activities outside the agricultural sector, such as production and sale of coconut, sugar and other food items, as well as doing work for wealthier families (Rogers, 2005). Therefore, Javanese women are more egalitarian[24] when compared with women in other regions (Wolf, 2000). The status of women in Java is equivalent to that of male workers when compared with the status of women in other regions, where they are more subordinated to males. Javanese women are independent, economically autonomous, and equal if not superior to their husbands, thus emphasizing their freedom (Hancock, 2001; Malhotra, 1991). The high female labour force participation in Java is attributed to the norm of work as a way of life for the Javanese (Widarti, 1998). These factors have historically accepted Javanese women' economic freedoms, compared with those of women in Sumatera. In Roger's (2005) study of time allocation for women' and male workers' work in a rural area of Java, the total number of hours worked by all women aged 15 and over on average is 11.1 hours as compared to

[24] Javanese women are relatively equal if not dominant position in household decision-making, they are neither superior nor subordinate to their husbands; they have different power and exert their influence indirectly.

only 8.7 hours for male workers. For women aged 30 and over, 5.5 hours are spent every day on 'domestic' tasks, most of this on food preparation, and 6.7 hours on income-earning tasks, a total of 12.2 hours a day.

Therefore, as expected, the gender discrimination effect was smaller than in other regions. A smaller constant term, being more educated, and working experience helped to reduce gender discrimination in Java, while being married, working in manufacturing, trade, and service sector have contributed to widening the gender discrimination in this region. The smaller percentage of wage discrimination in the Java region is due to several factors. First of all, Javanese women are more egalitarian than women in other regions (Malhotra, 1997). The globalization era also motivates women to pursue careers or to increase their personal and family income. The changes to the way of life have increased women' participation in the paid labour market (Susilowati, 2005). From a demand perspective, changes in the industrial composition of employment and the growth of the industrial economy have been important factors in reducing gender discrimination in the Java region.

9.4 Gender Discrimination and Earnings Differential in the Lesser Sunda Islands

The Lesser Sunda Islands comprise Bali, West Nusa Tenggara and East Nusa Tenggara. The tourism industry is the second largest industry after the agricultural industry in this region (Bali Statistics Office, 2012). Table 9.3 reflects that, for working people in this region, the dominant sector is the agricultural sector; regardless of existing problems, the agricultural sector in the broader sense still plays a strategic role for manpower in this region.

In addition to the agricultural sector in a broad sense, tourism is also occupying a position of no less importance in the structure of employment in the Lesser Sunda Islands.

As major world tourism destinations, Bali and Lombok provide employment opportunities for formal and informal sectors. The trade sector, restaurants, and hotels that constitute Bali's tourism industry rank second after the agricultural sector in terms of absorbing the labour force. According to Bali Statistics, data show that the people who worked in this sector, such as sales workers and service workers, number as many as 571,274. Specifically, this type of work has been dominated by women (313,691) rather than men (257,583). Krisnawati and Utrech (1992) confirmed that small-scale trading is very much a traditional domain of women in the sense that more women than men are engaged in this activity.

Table 9. 3: Number of Population Aged 15 Years and Over Who Worked by Industrial Origin and Sex in Bali Province, 2010.

	Industrial Origin	Male	Female	Total
1	Agriculture, Estate Crops, Forestry, and Fishery	349,356	322,848	672,204
2	Mining & Quarrying	3,617	3,425	7,042
3	Manufacture	152,383	151,206	303,589
4	Electricity and Water Supply	3,596	356	3,952
5	Construction	122,405	21,636	144,041
6	Trade, Restaurants, and Hotels	257,583	313,691	571,274
7	Transportations, Storage, and Communication	78,605	16,597	95,202
8	Finance, Insurance, and Real Estate	37,120	21,712	58,832
9	Public Services	187,223	133,999	321,222
	Total	1,191,888	985,470	2,177,358

Source: BPS Bali, (2012)

The culture and religion in this region are also very different from other regions in Indonesia. Bali itself is predominantly Hindu, while West Nusa Tenggara is dominated by Islam. In East Nusa Tenggara most of the population is Christian. Certainly, the religious and cultural differences affect work patterns and the status of women in the family. In terms of family and kinship, Bali adopts a patrilineal lineage system in which the family lineage favours male workers. In daily life, society has a very strong Balinese Hindu culture and these are also tourist attractions in this area.

Table 9.4 shows that the wage gap between males and females is 0.216 log points; the wage gap is lower than in Java region. The wage differential between male and female workers comes from the endowment factor (29 per cent) and the discrimination factor (71 per cent). This wage gap is mainly the result of intercept, living in urban areas, working experience and working in manufacturing sector.

Table 9. 4: Earnings Differential in Lesser Sunda Islands.

Variable	Log hourly wage gap $Ln\overline{W}_m - Ln\overline{W}_f$	%	Endowment Effect $\beta_m(\bar{X}_m - \bar{X}_f)$	Std. Error	%	Discrimination Effect $\bar{X}_f(\beta_m - \beta_f)$	Std. Error	%
INTERCEPT	0.289	134.2	0.000	0.000	0.0	0.289	0.085	134.2
NS	-0.003	-1.5	0.001**	0.001	0.3	-0.004*	0.002	-1.8
SUB-PRIM	-0.003	-1.3	-0.001**	0.001	-0.3	-0.002**	0.004	-1.0
JHS	-0.002	-0.9	0.006	0.002	2.6	-0.008**	0.006	-3.5
VJHS	-0.001	-0.3	0.002*	0.001	1.1	-0.003	0.001	-1.3
SHS	-0.004	-1.7	0.027	0.006	12.6	-0.031	0.013	-14.3
VSHS	-0.026	-11.9	0.010*	0.006	4.7	-0.036	0.008	-16.6
DIPI-II	-0.060	-27.8	-0.049	0.006	-22.8	-0.011**	0.008	-5.0
DIPIII	-0.048	-22.1	-0.038	0.006	-17.6	-0.010*	0.006	-4.5
UNI	-0.048	-22.4	-0.010**	0.010	-4.6	-0.038	0.011	-17.8
URBAN	0.082	38.0	0.004*	0.002	1.9	0.078	0.020	36.1
MARRIED	-0.008	-3.8	0.028	0.004	12.8	-0.036	0.023	-16.6
HMA10	-0.078	-36.3	0.000**	0.001	0.2	-0.079	0.033	-36.4
HMB10	0.005	2.5	0.000**	0.002	0.1	0.005**	0.014	2.4
EXP	0.060	27.7	0.117	0.013	54.3	-0.057	0.027	-26.6
EXPSQ	-0.018	-8.4	-0.034	0.006	-15.8	0.016**	0.013	7.5
MIN	0.001	0.6	0.000**	0.002	0.0	0.001**	0.001	0.6
MAN	0.024	11.3	0.007	0.003	3.4	0.017	0.008	7.9
UTIL	0.006	2.8	0.006	0.003	2.6	0.000**	0.001	0.2
CONS	-0.007	-3.1	-0.009**	0.007	-4.1	0.002**	0.002	1.1
TRADE	0.001	0.3	0.004**	0.003	1.8	-0.003**	0.012	-1.5
TRANS	-0.004	-1.7	-0.003**	0.007	-1.3	-0.001**	0.002	-0.4
FINC	0.002	0.8	0.000**	0.001	-0.1	0.002**	0.004	1.0
SERV	0.053	24.8	-0.006**	0.006	-2.8	0.059**	0.045	27.6
Total	0.216	100	0.062		29	0.153		71

Note: (i) all coefficients are statistically significant at 1 per cent level unless indicated otherwise;
(ii) * significant at 5 per cent level; ** not statistically significant.

The breakdown of this difference in the hourly wages gap is presented in table 9.4. The effect of education is varied, and secondary education shows a positive result. The effect of higher education is negative and significant, showing that female employees who studied and completed higher education at university are more likely to participate

in the labour market. This is also true for those who have completed technical and vocational studies, professional courses such as typing or accounting, and English. As expected, similar to the findings for the Java region, marriage has a positive effect on male workers' wages.

As in Java, factor endowment and discrimination have affected the level of the wage gap between male workers and female employees. The effect of discrimination is slightly higher than Java region, however it still much lower compared with other regions in Indonesia. This is a result of more equality and independence for female employees in the region. As expected, vocational education and diplomas have led to higher returns for female employees. The finding suggests that the highest return is from diplomas rather than college degrees, unlike other regions in Indonesia. This is certainly appropriate to the type of industry in this region, the tourism industry, which needs to hire a lot of skilled workers to work in hotels restaurants, and as tour guides etc.

Although the agricultural sector remains the number one job sector, the tourism industry has become the second largest industry in this region, especially Bali and West Nusa Tenggara. Even though the trade sector, restaurants, and hotels that constitute Bali's tourism industry in favour male employees, however tourism industry help female employees in reducing gender discrimination. This region has become a leading and dynamic Indonesia tourism destination. For example, of the 6.3 million foreign tourists who visited Indonesia in 2009, 2.2 million of them visited Bali (BPS, 2012).

9.5 Gender Discrimination and Earnings Differential in Kalimantan

The gross differential in earnings between males and females in Kalimantan can be attributed to differences in characteristics or the endowment effect and coefficients or unexplained residuals that are considered to be a result of the discrimination effect. The

results are presented in table 9.5. Wages in Kalimantan (Borneo) favour male over female employees by 0.302 log points.

Table 9. 5: Earnings Differential in Kalimantan.

Variable	Log hourly wage gap $Ln\overline{W}_m - Ln\overline{W}_f$	%	Endowment Effect $\beta_m(\bar{X}_m - \bar{X}_f)$	Std. Error	%	Discrimination Effect $\bar{X}_f(\beta_m - \beta_f)$	Std. Error	%
INTERCEPT	0.481	159.2	0.000	0.000	0.0	0.481	0.055	159.2
NS	-0.001	-0.5	0.001**	0.001	0.3	-0.002**	0.002	-0.8
SUB-PRIM	-0.010	-3.3	0.000**	0.000	-0.1	-0.010*	0.005	-3.3
JHS	0.007	2.2	0.015	0.003	4.9	-0.008	0.005	-2.7
VJHS	0.002	0.7	0.003	0.001	0.9	-0.001**	0.001	-0.2
SHS	-0.036	-12.0	0.019	0.005	6.1	-0.055	0.009	-18.2
VSHS	-0.021	-7.0	0.007*	0.004	2.3	-0.028	0.006	-9.3
DIPI-II	-0.076	-25.3	-0.060	0.005	-19.7	-0.017	0.006	-5.6
DIPIII	-0.052	-17.3	-0.037	0.004	-12.3	-0.015	0.004	-4.9
UNI	-0.107	-35.4	-0.078	0.007	-25.8	-0.029	0.009	-9.6
URBAN	0.052	17.2	0.001**	0.001	0.4	0.051	0.015	16.8
MARRIED	0.048	15.9	0.018	0.003	5.9	0.030	0.018	10.0
HMA10	-0.027	-8.8	0.000**	0.001	0.1	-0.027**	0.030	-8.9
HMB10	-0.016	-5.3	0.001**	0.001	0.3	-0.017**	0.011	-5.6
EXP	-0.137	-45.3	0.042	0.009	13.8	-0.179	0.031	-59.1
EXPSQ	0.034	11.3	-0.012	0.004	-4.0	0.046	0.017	15.3
MIN	0.040	13.1	0.042	0.009	13.9	-0.002**	0.002	-0.8
MAN	0.005	1.5	-0.002*	0.001	-0.7	0.007*	0.004	2.2
UTIL	0.000	0.1	0.000**	0.001	0.0	0.000**	0.001	0.1
CONS	0.023	7.6	0.024	0.014	8.0	-0.001**	0.001	-0.5
TRADE	0.019	6.2	0.017	0.003	5.5	0.002**	0.007	0.6
TRANS	-0.007	-2.4	-0.010	0.005	-3.3	0.003**	0.002	0.9
FINC	0.002	0.6	0.000**	0.000	-0.1	0.002**	0.002	0.6
SERV	0.082	27.0	0.032	0.010	10.7	0.049	0.025	16.3
Total	0.302	100	0.022		7	0.280		93

Note: (i) all coefficients are statistically significant at 1 per cent level unless indicated otherwise;
(ii) * significant at 5 per cent level; ** not statistically significant.

As the results show, discrimination seems to account for a much higher percentage of the gender wage differential compared to differences in characteristics given that males are only 7 per cent more productive than females. In comparison to the wage differential in other regions of Indonesia, the result shows that Kalimantan's differential is second largest after Java region. In addition to that, the trend is similar to that of Java and Lesser Sunda Island where the endowment effect favours male employees by smaller percentage. With respect to the unexplained part, for all levels of education, the signs are negative.

This is interpreted as showing that education does not contribute to the explanation of discrimination in Kalimantan, but actually works in favour of females. This finding is similar to all the other regions, reflecting an overall equality in the level of education between males and females.

Although table 9.5 shows that the personal characteristics of females have stronger effect than males, the log of hourly wage gap shows that there is an earnings gender wage gap that is mainly caused by the discrimination effect. The result shows that female employees have slightly lower endowments than male employees. Female employees on average have better employment-related characteristics as reflected by the negative sign in the endowment effect, which has an equalizing effect on the overall wage gap. The discrimination effect (i.e. the factors that cannot be attributed to differences in observed worker characteristics), accounts for the greatest part of the wage differential between male and female workers and is indicative of discrimination against female employees in the Indonesian labour market.

To understand which variables have the greatest impact on the endowments and discrimination effects, a detailed decomposition was performed and the results are presented in table 9.5. The key finding of this decomposition is that female employees had higher educational levels than male employees. As in other regions in Indonesia, female employees in rural Kalimantan are commonly thought of as mothers, as it is a female employees' job to look after and socialize their children, and especially to socialize girls to follow in their footsteps as wives, homemakers and mothers (Kevane and Levine, 2000).

Almost all type of industries are statistically significant in explaining gender earnings gap except for utilities and financial services. Electricity, gas and water are among utilities sector that are not affecting gender wage gap in Kalimantan. Mining, trade and public services, however, contribute in widening gender wage gap.

The problem in Kalimantan is different from other parts of Indonesia, as conflicts arose between two ethnic groups, namely the Madurese as migrants and the local Dayaks (Wanandi, 2002). Kalimantan's ethnic composition is equally as diverse as its neighbouring territories. The Muslim Malays and the non-Muslim Dayaks represent a broad division of Kalimantan society (Gin, 2011).

9.6 Gender Discrimination and Earnings Differential in Sulawesi

The Sulawesi region is located in the island of Sulawesi (formerly known as Celebes). There are four major ethnic groups living in this region. The Makassarese and the Bugise, mainly concentrated in the south-western peninsula, are Muslim and well-known traders and seafarers. The majority of Toraja ethnic group lives in the highlands of south-central Sulawesi. Although nominally Christian people, older animist beliefs persist and the Toraja practise the cult of animal sacrifices and placing their dead in trees and rock walls. In the northern peninsula are the Minahasa, who are now mainly Christian.

Although Sulawesi has abundant natural resources, the region is still less developed than Sumatera and Java regions, mostly due to a lack of sea, air and land transportation. South Sulawesi is known as the country's rice barn while North Sulawesi and Central Sulawesi are rich in marine resources and export-oriented agricultural produce such as seaweed, vanilla and coconut (Brown, 2009).

Similar to Kalimantan, the results of the wage differential in Sulawesi are presented in table 9.6**.** The total difference is 0.206 log points and is mainly driven by discrimination effect; it appears that females have characteristics that would enable them to earn 22 per cent more than male workers.

Table 9. 6: Earnings Differential in Sulawesi

Variable	Log hourly wage gap $Ln\overline{W}_m - Ln\overline{W}_f$	%	Endowment Effect $\beta_m(\bar{X}_m - \bar{X}_f)$	Std. Error	%	Discrimination Effect $\bar{X}_f(\beta_m - \beta_f)$	Std. Error	%
INTERCEPT	0.254	123.5	0.000	0.000	0.0	0.254	0.064	123.5
NS	0.001	0.6	-0.001**	0.001	-0.6	0.002*	0.001	1.2
SUB-PRIM	-0.004	-1.8	-0.005*	0.003	-2.2	0.001**	0.003	0.4
JHS	0.004	2.0	0.004**	0.004	2.0	0.000**	0.004	0.0
VJHS	0.001	0.3	0.000**	0.001	-0.2	0.001**	0.001	0.5
SHS	0.009	4.2	0.013	0.003	6.5	-0.005**	0.012	-2.3
VSHS	-0.035	-16.9	-0.012	0.003	-5.9	-0.023	0.008	-11.0
DIPI-II	-0.073	-35.6	-0.067	0.006	-32.5	-0.006**	0.009	-3.1
DIPIII	-0.046	-22.6	-0.040	0.004	-19.3	-0.007**	0.005	-3.3
UNI	-0.087	-42.3	-0.075	0.008	-36.3	-0.012**	0.013	-6.0
URBAN	-0.005	-2.7	0.002*	0.001	1.2	-0.008**	0.013	-3.8
MARRIED	0.028	13.5	0.032	0.004	15.5	-0.004**	0.019	-2.0
HMA10	0.043	20.7	0.001**	0.001	0.3	0.042	0.029	20.3
HMB10	-0.022	-10.7	0.002**	0.002	1.0	-0.024	0.012	-11.7
EXP	-0.206	-100.2	0.053	0.011	25.8	-0.259	0.025	-126.0
EXPSQ	0.054	26.2	-0.009	0.004	-4.3	0.063	0.013	30.5
MIN	0.001	0.7	0.001**	0.005	0.3	0.001**	0.001	0.4
MAN	0.010	4.7	-0.003	0.001	-1.4	0.013	0.004	6.2
UTIL	0.002	1.2	0.002**	0.002	0.9	0.000**	0.001	0.2
CONS	0.023	11.2	0.023**	0.017	11.4	0.000**	0.001	-0.2
TRADE	0.024	11.5	0.006	0.002	3.0	0.017	0.006	8.4
TRANS	-0.006	-3.1	-0.011	0.006	-5.2	0.004	0.002	2.1
FINC	0.002	0.9	0.001**	0.001	0.5	0.001**	0.002	0.5
SERV	0.236	114.7	0.037	0.013	17.8	0.199	0.037	96.9
Total	0.206	100	-0.045		-22	0.250		122

Note: (i) all coefficients are statistically significant at 1 per cent level unless indicated otherwise;
(ii) * significant at 5 per cent level; ** not statistically significant.

Turning to the components of the decomposition shown in table 9.6, almost all levels of education are the main characteristic advantages of females, except for no schooling and sub-primary education. Junior high school, senior high school and work experience are factors against females and may suggest an element of wage differential between males and females. Discrimination part shows strong effects on wage differentials. The intercept difference is positive and a major factor in wage discrimination. The other coefficients suggest that the rewards of being married and having adults in the household are other factors generating a male advantage.

Even though a large portion (22 per cent) of the reducing wage gap is due to female employees' improvement in the human capital and household characteristics, the discrimination effect remains high and contributes a significant point to the gender wage gap. The unexplained portion, which is commonly viewed as the discrimination effect, has contributed to the gender wage gap by 122 per cent. Susilowati (2005) found that the agricultural sector had among the highest male-female earnings differentials. Further, she pointed out that male and female workers in non-agricultural sectors have higher levels of education than their counterparts in the agricultural sector. It seems reasonable that the non-agricultural sector required higher-skilled workers. This condition supports the findings in previous results that female employees with higher levels of education received higher earnings compared to those who work in the agricultural sector, which is assumed to be an informal sector.

Turning to main industry, the decomposition figure on log hourly wage was due to endowment and discrimination effect on manufacturing, construction, trading, transportation, and service sector. For example, in regards to manufacturing industry, female employees earn higher income than male workers 4.7 per cent. This differential was because of endowment effect. But, if we look at discrimination effect, the male workers received as much as 6.2 per cent higher earnings than female. In transportation, female workers enjoyed higher earnings than male employees. The cause for this dominated by endowment effect. In the meantime, trading's and service earnings differential was due to endowment and discrimination effect. Both of these sectors, however, still favour male workers than female employees; the male earnings is higher than female workers income.

9.7 Gender Discrimination and Earnings Differential in Maluku

The Moluccas (Maluku Islands), originally known as the 'Spice Islands', are part of the eastern region of Indonesia. The results of the wage decomposition for Maluku are presented in table 9.7. The gender earnings differential in the Maluku Islands region has the same trend as Sulawesi region. The total wage gap was 0.133 log points and was mainly caused by the unexplained component. As in other regions, education was found to be more important in influencing the earnings of females than males. The returns for education were relatively higher for females in this region.

Table 9. 7: Earnings Differential in Maluku.

Variable	Log hourly wage gap $Ln\overline{W}_m - Ln\overline{W}_f$	%	Endowment Effect $\beta_m(\bar{X}_m - \bar{X}_f)$	Std. Error	%	Discrimination Effect $\bar{X}_f(\beta_m - \beta_f)$	Std. Error	%
INTERCEPT	0.253	190.6	0.000	0.000	0.0	0.253	0.213	190.6
NS	0.000	0.4	0.000**	0.001	-0.3	0.001**	0.003	0.7
SUB-PRIM	-0.002	-1.8	-0.009**	0.008	-6.9	0.007**	0.006	5.0
JHS	0.005	3.4	0.007**	0.014	5.5	-0.003**	0.008	-2.1
VJHS	0.001	0.6	0.001**	0.001	0.4	0.000**	0.003	0.2
SHS	-0.008	-6.3	0.027*	0.014	20.0	-0.035**	0.046	-26.3
VSHS	-0.012	-9.2	-0.002**	0.007	-1.7	-0.010**	0.022	-7.5
DIPI-II	-0.125	-94.4	-0.082	0.022	-61.5	-0.044**	0.034	-32.9
DIPIII	-0.034	-25.7	-0.030	0.010	-22.8	-0.004**	0.014	-2.9
UNI	-0.072	-53.9	-0.064	0.020	-48.0	-0.008**	0.043	-5.9
URBAN	0.004	2.7	-0.001**	0.002	-0.7	0.004**	0.038	3.3
MARRIED	-0.030	-22.7	0.027	0.009	20.5	-0.057**	0.049	-43.3
HMA10	-0.035	-26.2	0.001**	0.002	0.8	-0.036**	0.070	-26.9
HMB10	-0.011	-7.9	0.000**	0.003	0.1	-0.011**	0.032	-8.0
EXP	-0.319	-240.0	0.045**	0.037	34.2	-0.364	0.085	-274.2
EXPSQ	0.146	110.0	-0.023**	0.023	-17.2	0.169	0.048	127.3
MIN	0.017	12.8	0.017**	0.013	12.8	0.000**	0.002	0.0
MAN	0.004	3.0	0.002**	0.004	1.4	0.002**	0.005	1.6
UTIL	0.012	9.4	0.000**	0.002	0.2	0.012*	0.006	9.2
CONS	-0.006	-4.6	-0.011**	0.032	-8.2	0.005**	0.004	3.6
TRADE	0.020	14.8	0.009**	0.006	6.9	0.010**	0.014	7.8
TRANS	-0.014	-10.7	-0.021**	0.019	-15.8	0.007**	0.004	5.1
FINC	0.008	6.3	0.000**	0.001	0.1	0.008**	0.006	6.3
SERV	0.331	249.4	0.015**	0.037	11.3	0.316	0.126	238.1
Total	0.133	100	-0.092		-69	0.224		169

Note: (i) all coefficients are statistically significant at 1 per cent level unless indicated otherwise;
(ii) * significant at 5 per cent level; ** not statistically significant.

With respect to the role played by endowment factors in explaining the gender earnings differentials, the contribution was 69 per cent in favour of female employees. Meanwhile, discrimination and unmeasured skills have made the largest contribution to wage differentials, by 169 per cent.

The economy of Maluku region depends on plantation crops, agriculture, forestry, fishing, mining, industry and tourism. The infrastructure in Maluku is still limited, although air and sea transportation connects the islands and sea transportation is regular between most districts of Maluku. Ambon is the capital city of the region, and the main entrance into Maluku is through Pattimura International Airport. Maluku's economy also depends in large measure on fishing, including shrimps, crab, tuna and seaweed.

In regards to decomposition of log hourly wage in industry, the earnings differential in mining and trading sector in Maluku was particularly caused by endowment effect. Meanwhile, the wage gap in the areas of services, utilities (electric, gas, and water), contribute to the wage gap by 9.2 per cent. Amongst these, service sector has the highest differential percentage. Yet, it is noticeable that male employees earn higher income than female workers in service sector which mainly caused by discrimination sector by 238 per cent.

9.8 Gender Discrimination and Earnings Differential in Papua

The most eastern past of Indonesian territory is Papua on the island of New Guinea. Currently, the island is divided into two provinces, Papua and West Papua. The two provinces of Indonesian Papua together cover 22 per cent of the total landmass of Indonesia (BPS, 2012). According to Brown (2009), Papua region is the most sparsely-populated region in Indonesia. The majority of the population is located in rural areas and

three fifths is Protestant (Emmerson, 2000). The indigenous population of Papua is made up of hundreds of tribal groups speaking some 250 local languages (Aritonang and Steenbrink, 2008). The tribes are organized in sub-tribes and many of them live in remote areas, including the highlands in the central and the southern parts of Papua, which are virtually inaccessible by modern transportation. Since the island was incorporated into Indonesia in 1963, large-scale migrations from other parts of the region (notably Java) have begun to transform and increase the population (Wanandi, 2002; Emmerson, 2000; Pouwer, 2010).

Papua is rich in natural wealth, and the operation of gold mines in Papua since 1971 by Freeport Indonesia Ltd has attracted many immigrants, both domestic and foreign, to this region[25]. Most of them reside close to mining areas which are very developed areas, and they represent a huge contrast to the local indigenous people. It should be noted that many immigrants who come to this region are males with good educational qualifications and experience while most local residents are still living in remote areas and have low levels of education.

The estimated earnings differential between the two groups in logarithm is 0.034 or the lowest wage gap among the 7 regions of Indonesia. This result confirms the findings results by Pirmana (2006) that Papua records the lowest gap with Gini ratios about 0.275. Further decomposition results show that gender differences in earnings are

[25] In 2004 there were about 2.5 million inhabitants of whom an estimated 1.6 million (about 65 per cent) are Papuans. The remainder are newcomers who came after the incorporation of Papua into Indonesia in the 1960s. There are three categories of these: first is the transmigrants, who have been settled in Papua by the government as peasant farmers, second is 'free' migrants, who came as traders, taxi drivers, craftsmen, shopkeepers, salesmen and women at the market, miners and so on, and third is the government officials and army and police personnel, who were sent there on a tour of duty (Aritonang and Steenbrink, 2008).

due to the influence of work experience, location of residence, marriage and high school education.

Table 9. 8: Earnings Differential in Papua.

Variable	Log hourly wage gap $Ln\overline{W}_m - Ln\overline{W}_f$	%	Endowment Effect $\beta_m(\bar{X}_m - \bar{X}_f)$	Std. Error	%	Discrimination Effect $\bar{X}_f(\beta_m - \beta_f)$	Std. Error	%
INTERCEPT	0.309	907	0.000	0.000	0	0.309	0.122	907
NS	-0.003	-8.0	0.000**	0.001	0	-0.003**	0.003	-7.7
SUB-PRIM	-0.003	-8.7	0.001**	0.002	2	-0.004**	0.006	-10.5
JHS	-0.011	-33.4	0.009*	0.005	26	-0.020*	0.011	-59.2
VJHS	0.003	9.6	0.004**	0.005	12	-0.001*	0.001	-2.4
SHS	0.006	18.1	0.028	0.010	83	-0.022**	0.025	-65.0
VSHS	-0.034	-98.9	-0.005**	0.008	-14	-0.029**	0.019	-84.5
DIPI-II	-0.029	-84.7	-0.027	0.008	-80	-0.002**	0.011	-4.8
DIPIII	-0.038	-113.0	-0.025	0.008	-73	-0.014**	0.010	-39.9
UNI	-0.091	-266.0	-0.056	0.015	-165	-0.034**	0.023	-100.8
URBAN	0.092	270.1	0.013	0.005	38	0.079	0.031	232.3
MARRIED	0.026	77.8	0.027	0.008	78	0.000**	0.036	-0.4
HMA10	-0.111	-326.4	-0.004**	0.005	-12	-0.107	0.045	-314.1
HMB10	0.018	53.8	-0.010	0.004	-28	0.028**	0.022	82.0
EXP	0.009	26.4	0.073	0.020	215	-0.064**	0.057	-188.2
EXPSQ	0.014	41.3	-0.032	0.014	-94	0.046	0.030	135.0
MIN	0.046	136.4	0.048	0.016	141	-0.001**	0.002	-4.1
MAN	-0.013	-37.9	-0.001**	0.001	-2	-0.012**	0.009	-36.1
UTIL	0.001	3.6	0.001**	0.002	4	0.000**	0.001	0.0
CONS	0.028	83.0	0.033*	0.020	96	-0.004**	0.003	-12.7
TRADE	-0.041	-119.8	0.004**	0.008	12	-0.045	0.017	-132.1
TRANS	0.006	17.6	0.013**	0.011	37	-0.007	0.003	-19.9
FINC	0.003	9.4	-0.001**	0.001	-2	0.004**	0.005	11.6
SERV	-0.156	-457.7	-0.037	0.012	-109	-0.119	0.057	-348.9
Total	0.034	100	0.055		163	-0.021		-63.1

Note: (i) all coefficients are statistically significant at 1 per cent level unless indicated otherwise;
(ii) * significant at 5 per cent level; ** not statistically significant.

Male workers benefit from working experience and living in urban areas where the formal and non-agricultural jobs are located. Furthermore, the results found for this region show that married female employees tend to widen the gender earnings differential due to them doing household chores such as cooking and raising children. On the other hand, table 9.8 shows that female employees with higher levels of education, which are associated with skilled workers, earned more than their counterparts. For instance, female

employees with university education could narrow the gender earnings differential by 44.3 per cent.

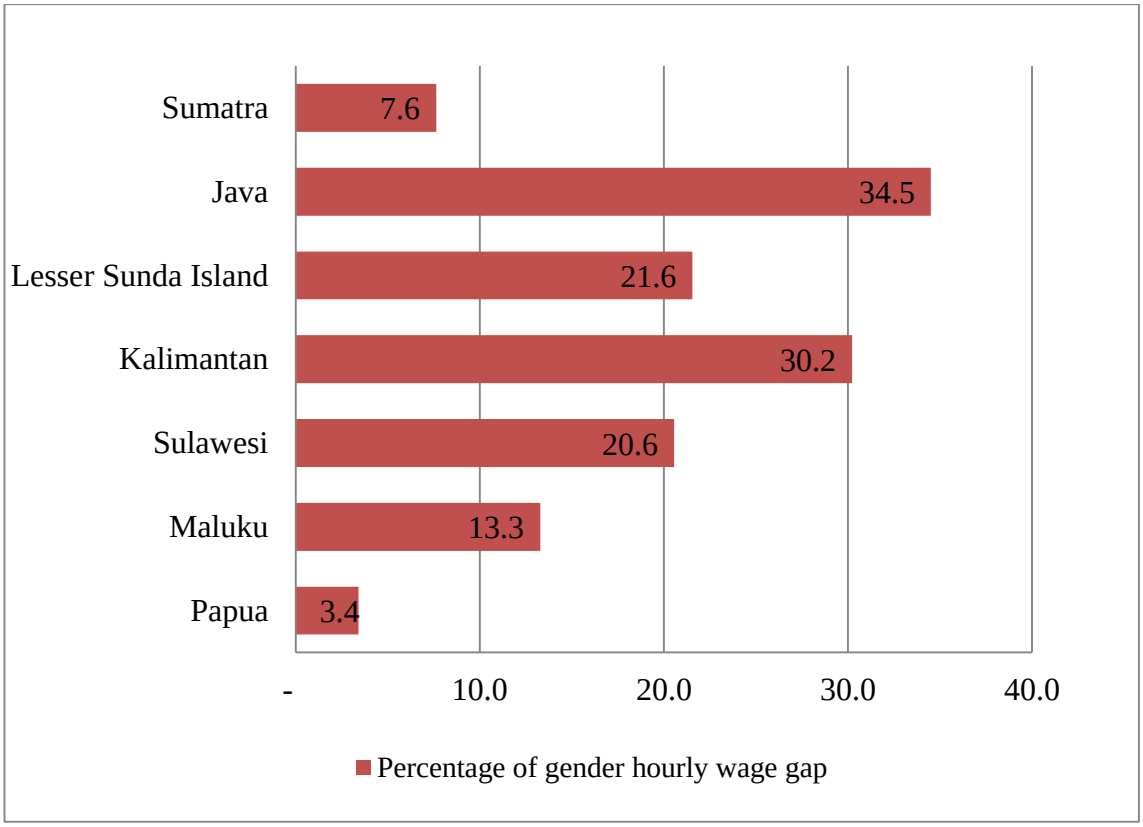
In Papua, mining industry's log hourly wage decomposition showed that the endowment factors have the strongest impact on earnings gap (141 per cent), and followed by construction sector (9 per cent). This two industries earnings decomposition showed that they favour male employees than female workers. In the meantime, trading, transportation, and services industry predominantly bring advantage to female employees. In trade sectors, female employees earn higher income compared to male workers, it reduces wage gap by 119.8 per cent. Interestingly, service industry earnings differential was also due to endowment effect, but, this industry still benefiting female workers earnings than male employees.

9.9 Regional Gender Earnings Differential and Discrimination in Indonesia

This section portrays that all regions favour male workers earn more than their counterpart. However, the rates of earnings differentials are vary among regions. Aside from endowment factors, discrimination factors significantly affect the gender earnings gap. In many developing countries, gender gaps are widespread in access to and control over resources, economic power and political participation. Women still have limited access to a variety of productive resources including education, land, information, and financial access. For example, women entrepreneurs tend to have lack of capital, lack of access to machinery, fertilizers and information compared to entrepreneurs who are managed by men. Despite the rapid progress in gender equality, there is no region in the third world where women have enjoyed equal right, social and economic rights. The nature and type of discrimination varies in different countries or regions (World Bank, 2001).

Following the Blinder-Oaxaca (1973) decomposition method, figure 9.1 presents the regional gender earnings differential using 2009 national labour force survey data (Sakernas). The decompositions show how much of the gap is due to differing endowments between the two groups, and how much is due to discrimination. Level of education, household characteristics and working experience are among the factors measuring gender earnings differential across regions in Indonesia. Other unobserved factors such as culture, work ethic and types of job are used to analyse the findings.

Figure 9. 1: Percentage of Gender Hourly Wage Gap across Regions in Indonesia, 2009



The results of this study express in the percentage form which range from 0 to 100. Figure 9.1 reveals the decomposition results on the gender earnings differential across regions in Indonesia. The decomposition results clearly show that there are significant gender inequalities in earnings among region in Indonesia. This result is consistent with the findings of Feridhanusetyawan et al. (2001) and Pirmana (2006) that

gender earnings gap exists in Indonesian labour market. A large proportion of the difference in the wage of female and male workers was attributable to discrimination effects. Worker's education is an important factor contributing to the closing gender wage gap.

Figure 9.1 shows that Sumatera region considered as second lowest gender earning gap after Papua region. The gender earnings gap in this region is about 7.6 percent out of 100 percent. It means that male workers earn more wages than female workers who reside in this region. This gender earnings gap is mainly contributed by discrimination factors. Meanwhile endowment factors tend to reduce the gender earnings gap in this region. This result is also consistent with findings of Pirmana (2006) that the earnings differential is mainly caused by discrimination factors.

Among the discrimination factors are social norms, customs, rights and laws as well as economic institutions such as markets, shape roles and relationships between male and female workers, and the influence of what resources men and women have access to, and what activities they can or cannot undertake (World Bank, 2001). As an example, Malays, as the ethnic majority in Sumatera hold the Muslim belief that it is men, as heads of households, who are responsible for financial matters and decision-making in society. It is argued that the low level of involvement in economic activity by Malay women is due in part to the more traditionally Islamic values among this group (Widarti, 1998). Married women's main responsibility is to take care of the children and household and they might participate in waged employment only after obtaining permission from the husband. Furthermore, in terms of the endowments factor, female workers, on the contrary, are more productive than male workers. This means that education variables contribute a positive effect on women's employment and could reduce the gender earnings gap.

The region of Java ranks number one in the highest level of gender earnings disparity by 34.5 per cent. Figure 9.1 exhibits that individuals who reside in Java region significantly receive gender earnings gap nearly five time than Sumatera region. This supports the findings of Feridhanusetyawan et al. (2001) that male-female wage differential are significantly higher in Java region especially in urban areas. Their results suggest that both of endowment and discrimination factors contributed to wide gender earnings gap.

Unlike the Sumatera region where the endowment factors can reduce the gender earnings gap, the two components in Java region, namely endowment components and discrimination components, provide a meaningful contribution to income disparities between males and females. Among the factors that cause the higher gender wage gap is educational level. Since the Java region tends to have more industry-oriented enterprises such as textiles, clothing, cigarettes, shoes, electronics, and plastic and chemical industries, which do not require a higher level of education (Brown, 2009), this implies that female employees with university educations only contribute a small percentage in reducing the gender earnings gap. Interestingly, the discrimination effect is much lower than in other regions; this result is due to changes in social norms, customs and the structure of the economy in Java region. Today, thousands of young Javanese women work in paid employment and travel daily to the factories. Participation in the labour force by Javanese women is attributed to the norm of work as a way of life (Widarti, 1998). Thirty years ago, Sundanese women, for example, rarely left their village area and were forbidden to leave the area alone. Sundanese women have long been confined to the home and were not traditionally active in external production (Hancock, 2001).

Compared to the other regions of gender wage differential, Kalimantan (Borneo) has the biggest earnings gap in Indonesia, actually account for a 30.2 percent wage differential in favour of males. Although figure 9.1 shows that females have stronger

personal characteristics than males, the raw hourly wage gap shows that there is an earnings gender wage gap that is mainly caused by the effects of discrimination. The result shows that female employees have higher endowments (e.g. higher educational levels) than male employees. Female employees on average have better employment-related characteristics as reflected by the negative sign in endowment effect, which has an equalizing effect on the overall wage gap. As in other regions of Indonesia, women in rural Kalimantan commonly thought that, as a mother, a women's job was to look after and socialise their children, especially to socialise girls to follow in their footsteps as wives, homemakers and mothers (Kevane and Levine, 2000).

The Lesser Sunda Islands, which cover three provinces, namely Bali, West Nusa Tenggara and East Nusa Tenggara, have nearly equal gender earnings differential to Sulawesi region by 20.6 percent. In addition, these regions have 13.9 percent lower of gender wage differential compared to Java. This finding implies that male workers who reside in Lesser Sunda Islands and Sulawesi region earn more wages up to 20 percent than their counterpart, female workers.

In the Lesser Sunda Islands, these earnings differences are caused by individual characteristic factors and coefficient factors. Meanwhile, in Sulawesi the coefficient factors or discrimination factors are the primary factors contributing to the gender earnings gap, as the characteristic factors are strongly in favour of females rather than males. Although the Lesser Sunda Islands are the major tourism destination in Indonesia, the agricultural sector remains the major type of industry in this region and is dominated by male workers. Secondary education and working experience are major components that are attributed to the wider gender earnings gap. Compared to the Lesser Sunda Islands, Sulawesi shows higher gender discrimination possibly due to religion, culture and social norms.

The eastern part of the Indonesian region is Papua, which has the lowest gender earnings gap among the 7 regions of the country by 3.4 percent. These findings are supported with findings of Pirmana (2006) that Papua has the highest country's real earnings on average over the analysis period, 1996-2004. Like Sumatera, the discrimination component is the main contributor to the gender earnings differential in Papua and Maluku. Meanwhile the endowment factor shows equality between males and females. Male workers benefit from working experience and living in urban areas where the formal sector and non-agricultural jobs are located. Females who work in the agricultural sector, which is considered an informal sector such as small traders, street vendors and carpenters, contribute significantly to the unexplained portion. Furthermore, the results from this region show that married female employees tend to widen the gender earnings differential due to doing household chores such as cooking and raising children. On the other hand, figure 9.1 shows that female employees with higher levels of education, which are associated with skilled work, earned more than their counterparts.

9.10 Ethnicity and Religion Diversity of Indonesia

As previously mentioned, there are two unobserved factors which may link to the gender discrimination and earnings gap in this country; these are the ethnicity and religion. In the following sub-sections, exploration on the variables will be presented.

9.10.1 Ethnicity

Indonesia has a very diverse range of ethnic groups, and certain ethnicities dominate the other tribes. Therefore, the ethnic majority leads the government, politics and the economy. Indonesia's population can be divided broadly into two groups. The western part of the Indonesian population is mostly ethnic Malays while the east is a tribe in Papua, which has roots in the islands of Melanesia (Aritonang and Steenbrink, 2008).

Many of Indonesia's population consider themselves as part of specific ethnic groups, which are divided by language and region, such as Javanese, Sundanese or Batak.

The inclusion of ethnic background in this analysis is based on the argument that the involvement of women in the labour market is influenced by social values derived from their cultural background (Widarti, 1998). Generally, the ethnic population of Indonesia is determined to follow the paternalistic line (father/male). However, there are several ethnic groups in Indonesia who follow the maternalistic line (mother/female), such as the Minangkabau tribe in West Sumatera (Kahn, 1980). Some of these traditions come from the matrilineal system of West Sumatera where the inheritance of property follows the female line. By contrast, the nearby Batak society in northern Sumatera is strongly patrilineal; women are unable to inherit and are economically dependent on men as well as excluded from public decision-making (Ihromi, 1994). And in Java, society is organised bilaterally; there is a greater degree of equality between the sexes and women play a prominent role in commerce and agriculture, although tradition has excluded them from public political life (Blackburn, 2004).

The structure and composition of the population by ethnic group are presented in table 9.9. In the 2010 population census data, table 9.9 shows that the ethnic groups in Indonesia are numerous and diverse. In addition to a diversity of ethnic groups (Choy, 1999), the number or size of the population of each ethnic group also differs widely. Java tribes are scattered across almost all regions of Indonesia, and their population has reached 95.2 million people (40.2 per cent of the total population). The Javanese, who mainly inhabit central and eastern Java, constitute the largest ethnic group in Indonesia. They have a strong bearing on politics and culture (Carnegie, 2010). The Java ethnicity is a combination of Javanese, Osing, Tengger, Samin, Bawean/Boyan, Naga, Nagaring and other tribes of Java Island. The Sundanese of Western Java account for 36.7 million people (15.5 per cent of the total population). Between them, these two ethnic groups alone account for about 55.7 per cent of 237 million people of total Indonesian population (BPS, 2011).

The next largest ethnic group as presented in the table 9.9 is ethnic Bataks at 8.5 million (3.6 per cent) followed by Sulawesi ethnics at 7.6 million people (3.2 per cent). The Batak tribe, including Angkola, Batak Karo, Batak Mandailing, Batak Dairi Pakpak, Batak Simalungun, Tapanuli Batak, Batak Toba and Dairi, mainly live in North Sumatera. The Sulawesi ethnicity is a combination of as many as 208 types of ethnic groups including Makassar, Bugis, Minahasa and Gorontalo[26]. According to the 2010 population census report, the composition of the population by Papua ethnic groups shows some interesting phenomena. Papua tribes amounted to more than 466 ethnic groups spread across the territory of Papua and West Papua, but the population as a whole amounted to only 2.7 million people (1.14 per cent). The Papua tribes ranked only 19th of 31 ethnic groups as a whole. Similar conditions were also seen in the Dayak from Borneo Island. Table 9.9 indicates that the Dayak tribe, which included about 268 types of ethnic population in 2010, accounted for only 3 million people (1.3 per cent) and was ranked 17th of the 31 ethnic groups. The Madura, who were originally derived from the island of Madura, a small island to the east of Java island, have been spreading rapidly for two decades in many regions in Indonesia; there are as many as 7.18 million Madurese or approximately 3.03 per cent of the population of Indonesia and they are ranked 5th of the 31 ethnic groups.

Ethnic Sunda and the Javanese in Java region are the majority tribal groups in Indonesia, while racial groups such as Chinese, Arabs and Europeans represent Indonesia's minorities. Among the non-indigenous ethnic groups, the Chinese and Arabs are the most numerous and influential. The results of the 2010 census show that that the ethnic Chinese made up about 1.2 per cent of the national population, around 2.8 million people. Aside from the ethnic Chinese, there are other foreign tribes or non-indigenous ethnic groups, including Arabs, who are much fewer in number: the 2010 census suggested no more than 0.07 per cent, or around 162,774 people.

[26] The most numerous ethnic group of Sulawesi are the Bugis and Makassar which occupies almost the entire eastern half of the peninsula. The Bugis and Makasar peoples are often stereotyped as sailors, traders and even, occasionally, as pirates (Druce, 2009)

Table 9. 9: Total and Percentage of Population by Ethnic Group

Ethnic group	**Total**	**Percentage**	**Ranking**
Indonesian citizens			
Aceh tribes	4,091,451	1.73	14
Batak	8,466,969	3.58	3
Nias	1,041,925	0.44	30
Malay	5,365,399	2.27	10
Minangkabau	6,462,713	2.73	7
Jambi tribes	1,415,547	0.6	25
South Sumatera tribes	5,119,581	2.16	10
Lampung tribes	1,381,660	0.58	26
Other Sumatera tribes	2,204,472	0.93	21
Betawi	6,807,968	2.88	6
Banten tribes	4,657,784	1.97	11
Sunda	36,701,670	15.5	2
Jawa	95,217,022	40.22	1
Cirebon	1,877,514	0.79	24
Madura	7,179,356	3.03	5
Bali	3,946,416	1.67	15
Sasak	3,173,127	1.34	16
Other West Nusa Tenggara tribes	1,280,094	0.54	27
East Nusa Tenggara tribes	4,184,923	1.77	12
Dayak	3,009,494	1.27	17
Banjar	4,127,124	1.74	13
Other Kalimantan tribes	1,968,620	0.83	22
Makassar	2,672,590	1.13	20
Bugis	6,359,700	2.69	8
Minahasa	1,237,177	0.52	29
Gorontalo	1,251,494	0.53	28
Other Sulawesi tribes	7,634,262	3.22	4
Maluku tribes	2,203,415	0.93	22
Papua tribes	2,693,630	1.14	19
Chinese	2,832,510	1.2	18
Foreign tribes	162,772	0.07	31
Total	236,728,379	99.62	
Foreign citizens	73,217	0.03	
Not asked*	839,730	0.35	
Total population	237,641,326	100	

Source: BPS (2010a)

Note：* In 2010 the population census used three lists or questionnaires. Where the first questionnaire, SP2010-C1, is used to complete the enumeration of the households, the next questionnaire, SP201-C2, is used to count the people living in specific locations or unmapped areas, remote communities, residents of boats, and the members of the diplomatic corps and their families in foreign countries. The last form, SP2010-L2, is used to count the homeless population, Indonesia-flagged vessels' crews, refugees and indigenous people. In the list of C2 and L2, people were not asked their ethnicity and religion status.

9.10.2 Religion

Compared to the Western world, religion plays an important role in private and public life in Indonesia. Table 9.3 describes the situation pertaining to population and religion. Although the majority of Indonesians follow Islam, Indonesia has many Protestants, Catholics, Hindus and Buddhists, among other religious groups. The state has no official religion but recognizes the aforementioned ones (Vickers, 2005). Religion in Indonesia is not a political ideology or a political system; rather, it is restricted to personal life (Porshee, 2006). The Constitution of Indonesia guarantees its citizens the right to practise their faith freely (Choy, 1999 and Phillips, 2005). However the constitution does not guarantee freedom for those who follow no faith. Although the right to practise their faith is limited to those recognised by the state - Muslims, Protestants, Catholics, Hindus, Buddhists and Kong Huchu - there are many faiths such as animist beliefs that still exist in the community, especially in the remote areas.

According to the 2010 national census, Indonesian Muslims constitute 87 per cent of the Indonesian population, totalling about 207 million (BPS, 2011). Although Muslims can be found in almost all regions of Indonesia, there are some regions that are particularly renowned for their devotion to Islam. West Java and East Java contain a large proportion of practising Muslims. Meanwhile, outside Java, Islam is rooted in Aceh, Northern Sumatera, West Sumatera, Kalimantan and South Sulawesi.

Table 9.10 shows that Christianity is the country's second largest religion after Islam, and Christians are found in centres all over Indonesia. About 7 per cent of the population of Indonesia are Protestants and 3 per cent are Catholics. Protestantism arrived in Indonesia via the Dutch East India Company or *Vereenigde Oost-Indische*

Compagnie (VOC) colonisation in the sixteenth century[27]. The missionary effort in most part did not extend to Java or areas that have a Muslim majority. The religion expanded considerably in the 20th century, marked by the arrival of European missionaries in some parts of the country, such as Western New Guinea and the Lesser Sunda Islands (Aritonang and Steenbrink, 2008).

Protestants form a significant minority in some parts of Indonesia. For example, on the island of Sulawesi, 15 percent of the residents are Protestants, especially in the Tana Toraja regency in South Sulawesi and Central Sulawesi[28]. There are around 85 percent of the population of ethnic Toraja is Protestant (Howe, 2005 and Druce, 2009). The Bataks of North Sumatera are also one of the major Protestant groups in Indonesia. Among Chinese Indonesians, a significant part of the population is Protestant, and they are spread throughout Indonesia with the majority concentrated in the big cities. Indonesia has two Protestant-majority provinces, Papua and North Sulawesi, with 63 percent and 52 percent of the total population respectively (Aritonang and Steenbrink, 2008). In Papua, Protestantism is the most widely-practised religion among indigenous Papuans (Diana, 2008). In North Sulawesi, the Minahasa tribes centred on Manado turned to Christianity in the nineteenth century. Currently, most of the natives of North Sulawesi practise some form of Protestantism, while migrants from Java and Madura practise Islam (BPS, 2011).

Although Indonesia is predominantly an Islamic country, Hindus account for two per cent and Buddhists one per cent. Bali is an important traditional Hindu-Buddhist island and there are traces of the Hindu-Buddhist religion throughout Indonesian culture (Howe, 2005). Balinese Hinduism is growing and most of the people have become

[27] Although Christianity arrived in Indonesia in pre-colonial era (1600-1900), however Christianity spread widely all across Indonesia since sixteenth century (Aritonang and Steenbrink, 2008).
[28] The Toraja began to convert to Christianity in the early of the twentieth century as a result of Dutch missionaries (Druce, 2009)

believers. Hinduism in Bali began to grow and develop in the eighth century, along with the growth of Hinduism in Central Java, and there are many Hindu influences on the local culture, as well as the system of government. According to the 2010 Indonesian national population census, 96 percent of the population of Bali are Hindu, and the culture and social life in Bali is very strongly centred on the Hindu tradition[29] (BPS, 2010; Pringle, 2004).

Table 9. 10: Population by Region and Religion

Region	Religion									
	Moslem	Protestant	Catholic	Hindu	Buddhist	Khong Huchu	Other	Not Stated	Not Asked*	Total
Sumatera	44,111,873	4,622,311	788,017	175,698	707,937	50,815	9,728	12,911	151,641	50,630,931
Percentage	(87.12)	(9.13)	(1.56)	(0.35)	(1.40)	(0.10)	(0.02)	(0.03)	(0.30)	(100)
Java	130,651,037	3,077,646	1,387,907	182,916	659,611	32,609	27,994	119,591	471,279	136,610,590
Percentage	(95.64)	(2.25)	(1.02)	(0.13)	(0.48)	(0.02)	(0.02)	(0.09)	(0.34)	(100)
LSI	5,285,453	1,705,473	2,576,228	3,370,576	36,099	657	81,451	278	18,581	13,074,796
Percentage	(40.42)	(13.04)	(19.70)	(25.78)	(0.28)	(0.01)	(0.62)	(0.00)	(0.14)	(100)
Kalimantan	10,786,584	1,238,961	1,221,321	37,578	268,073	31,467	158,640	2,845	42,362	13,787,831
Percentage	(78.23)	(8.99)	(8.86)	(0.27)	(1.94)	(0.23)	(1.15)	(0.02)	(0.31)	(100)
Sulawesi	14,051,853	2,726,724	271,385	236,200	29,132	1,113	15,230	3,508	36,637	17,371,782
Percentage	(80.89)	(15.70)	(1.56)	(1.36)	(0.17)	(0.01)	(0.09)	(0.02)	(0.21)	(100)
Maluku	1,547,240	893,312	109,007	5,869	349	329	6,400	87	9,000	2,571,593
Percentage	(60.17)	(34.74)	(4.24)	(0.23)	(0.01)	(0.01)	(0.25)	(0.00)	(0.35)	(100)
Papua	742,122	2,264,086	554,008	3,279	2,053	101	174	362	27,618	3,593,803
Percentage	(20.65)	(63.00)	(15.42)	(0.09)	(0.06)	(0.00)	(0.00)	(0.01)	(0.77)	(100)
Total	207,176,162	16,528,513	6,907,873	4,012,116	1,703,254	117,091	299,617	139,582	757,118	237,641,326
Percentage	(87.18)	(6.96)	(2.91)	(1.69)	(0.72)	(0.05)	(0.13)	(0.06)	(0.32)	(100)

Source: BPS (2010)

Note: * In 2010 the population census used three lists or questionnaires. The first questionnaire, SP2010-C1, is used to complete the enumeration of the households, while the next questionnaire, SP201-C2, is used to count the people living in specific locations or unmapped areas, remote communities, boat residents, and the members of the diplomatic corps and their families in foreign countries. The last form, SP2010-L2, is used to count the homeless population, Indonesia-flagged vessels' crews, refugees and indigenous people. In the list of C2 and L2, people were not asked their ethnicity and religion status.

[29] Thomasson (2010) describes Bali is an island so rich in its diversity and spirituality.

Wage and earnings differentials between genders are one of the variables that mark the regional differences. Unequal economic opportunities are frequently related to access to education, location of stay, marital status and religion. The data analysis of earnings differential based on region has thus far indicated positive gender discrepancies in income. Therefore, it could be assumed that by strengthening equal employment opportunities and wages across genders, such attempts could possibly reduce the gender earnings differential in the Indonesian labour market.

9.11 Conclusion

The analysis of the regional earnings decomposition between males and females in Indonesia was intended to show how much of the difference in gender wage differential was due to differences in endowment factors and how much was due to discrimination factors. The results reveal that the degree of discrimination is still quite significant against females in all regions in Indonesia. Among factors that influence gender wage gap and discrimination in the country, education was found to be more important in influencing the earnings of females than males. The returns from education were relatively higher for females in all regions.

Women in Indonesia have achieved progress development in education, job opportunities and involvement in various aspects of life. Although female employees have a higher level of productivity in some regions, there is still a high level of gender discrimination in all parts of Indonesia. Traditionally, many observers have claimed that the unusually low status of women and gender inequalities in Indonesia are due to the patriarchal culture of Islam.

The results of the decomposition show that female employees have been catching up through the increase in education, especially higher education, having adults in the

household and the decreasing rate of return to experience. Although the discrimination effect remains high in the labour market, lowering the level of individual characteristics has been an important factor in narrowing the gender wage gap in the Indonesian labour market. According to the Blinder-Oaxaca (1973) decomposition, most of the decline in the endowment effect is due to the human capital factor such as the increased level of female employees' education. Meanwhile, the discrimination effect is mostly affected by unknown factors through constant terms such as industry, religion, culture, work ethic, and government regulation.

Finally, we can conclude that the gender earnings differentials exist within the regions of Indonesia. The region of Papua reported to have the lowest earnings gap as compared to Kalimantan region as the large earnings gap. Differences in endowments between the gender groups such as working experience have made a considerable contribution to gender earnings differentials. In contrast, education has contributed to reduce earnings gap significantly. There are many omitted factors such as culture, work efforts, government regulation and type of jobs. The major source of discrimination is predominantly coming from different jobs sector as well as position of women in the household as housewife.

CHAPTER 10
CONCLUSION

10.1 Introduction

This chapter presents the conclusion of the thesis. Throughout this thesis, the aim has been to answer the research questions that have been established and to contribute to this area of knowledge. The chapter summarizes the main empirical outcomes, considering the aims and objectives of the thesis. In addition to this, a comprehensive analysis of the output of this research will be summarized to assess its contribution to policy-making for the Indonesian labour market. The results and implications of the study may also benefit other developing countries, in which few similar studies have yet been conducted.

Finally, this research is not without its imperfections. Therefore, this chapter will also highlight several areas for future research. Addressing the highlighted limitations and recommendations for future research will not only add robustness to labour economics studies but will also help to formulate advanced arguments and explanations of gender earnings differentials.

10.2 Research Summary

Over the decades, many developing countries have attempted to increase schools' gross and net enrolment rates. Educational attainment is perceived as a primary means of spurring economic growth in any country. An array of studies of returns to human capital and gender earnings differentials has been conducted in both developed and developing countries. In the case of Indonesia, the most crucial pieces of research examining gender differences in return to education were conducted by Behrman and Deolalikar (1991, 1993 and 1995), Deolalikar (1993), and Byron and Takahashi (1989). They found that the

return to education and gender earning differences were strongly associated with level of education, working experience and other relevant variables, such as marital status or type of occupation.

Most of these researchers adopted the human capital model developed by Mincer (1974) with some modifications, such as treating earnings as a function of education, experience, and other personal characteristics such as marital status and number of dependent children. The human capital earnings equations are estimated using standard Ordinary Least Squares to compute rates of return to education, with separate regressions for males and females.

The regression results in this study provide evidence of the gender earnings over age, education, living area, total number of family members and working experience. The education variables do significantly affect earnings, while 'no schooling' and 'sub-primary education' has a negative effect on earnings. The estimated coefficients reveal that the effect of education on earnings is larger as the educational level increases. This result confirmed Behrman's findings that educational level affects earnings in Indonesia, as income levels increased with a higher level of education. The return to university education is the highest return of all levels of education, while sub-primary education shows the lowest rate of return to education for male and female workers.

During the period 1989-2009, the result indicates that the coefficients of dummy variables for all educational levels are generally higher for females than for males. These results are also consistent with Behrman's (1995) finding that the rates of return to education are higher for females than for males. No schooling category has a bigger impact on females employees' earnings than on male employees. This result leads us to conclude that female employees gain higher benefits when their educational level increases.

Males achieve higher earnings when the size of their families increases. This is because male workers are considered heads of households who must take responsibility for all family members. Male workers are motivated to work harder and for longer hours as the size of the family increases. As expected, the effect of working experience is positive and the working experience square is negative, showing an inverted U-shaped curve. This indicates that, the more work experience an individual has, the higher the earnings he/she is able to gain. The work experience square has been included to show that the more work experience an individual has, the higher the earnings he/she is able to achieve. However, the effect of an additional year of experience tends to decline over time.

The earnings of males and females residing in urban and rural areas are slightly different. In 1989, the return to education was higher in the rural areas than in the urban areas for all levels of education except senior high school level and working experience. Conversely, in 2009, the returns to all levels of education, working experience, male and married workers are higher in urban areas than in rural areas. During these two decades, the trend of Indonesian labour market earnings tends to change from favouring rural workers to favouring urban workings. This change was caused by rapid economic growth which has mostly taken place in urban regions.

The presence of two types of household members appears to be a factor in determining the level of earnings. The presence of household members aged over ten years showed a negative impact on male workers in 1999 and 2009, while the presence of household members under ten affected female workers in 1999 and 2009. The variable 'male and married' appears to have a positive effect on workers' earnings in urban and rural areas. The result shows that male workers in rural areas earn higher incomes than male workers in urban areas.

The married variable was included in the model according to the hypothesis that married individuals are more mature, stable and less likely to quit their jobs than unmarried workers and are therefore likely to earn higher wages. It is common in Indonesia for married male workers to be heads of households and to take responsibility for the family, including financial matters. Workers with more financial responsibilities are more willing to work hard and take unpleasant jobs in order to earn more. Therefore, it is not surprising that married male workers earn more than married female workers in both rural and urban groups.

Analytical thoughts on the wage discrimination problem are mainly rooted in differences in endowment factors such as education and age across genders (Mincer, 1974). This statement corresponds with the results of this study which show that there were more female than male employees with no schooling and sub-primary education in 1989 and 1999. Male workers who have no schooling still enjoy higher incomes than female employees because of the physical strength they possess, which allows them to obtain jobs without requiring higher levels of education. Conversely, female employees who receive upper secondary and tertiary education gain the opportunity to earn more than male workers.

As the country progressed toward the achievement of the millennium goals, the findings on the second decade of the period covered by this research revealed that Indonesia tended to experience less gender earnings differential from 1989 to 2009. The realization of better economic growth and improvement in social mobility has provided better employment opportunities for female employees. The statistical analysis of women's contribution to industrial sectors, for instance, showed a significant proportion of female workers, which also constituted evidence of the lower tendency for discrimination during these years. In addition, greater educational attainment is bridging

the male-female pay gap. Higher levels of schooling encourage women's participation in the labour force, thus decreasing the earnings difference.

Further investigation of the regional earnings differential, however, produced various results. Some regions demonstrate a positive effect of education on women's participation in the labour market. These analysis results are likely to be influenced by the existence of the marital factor, place of residence, and size of household. Conventional perspectives that limit women to domestic responsibilities such as taking care of children or housekeeping are still the main contributory factor to wage differentials in some areas. Therefore, as Indonesia has committed itself to regional advancement through the decentralization policy, the new administration structure is expected to provide significant opportunities for equalization between genders within the labour market.

Gender inequality has always been an interesting topic of discussion for social scientists. Despite modernization or the increasing global economic growth, recent research into gender issues shows that discrimination between males and females still exists in all spheres of life. A country may have declared its independence a long time ago but, in reality, women's position and participation in its economic development is still questionable. This is true for Indonesia. The female labour force has improved rapidly in all types of jobs. However, it has been observed that there is large gap in earnings between male and female workers in Indonesia's labour market.

Although women's susceptibility to workplace discrimination may still exist, the labour force statistics for the last three decades show that gender inequality has been reduced to a minimum. One reason for this is the fact that women's human capital has risen because women have increased their investment in education, thus increasing their participation in the labour force. These changes began after the 1980s, but before then the effect was offset by the entry into the labour market of women with relatively low levels of work experience and education. After the reformation era in 1997, large numbers of

women remained in the labour market continuously until they married and had children. Occupational change also played a role, as women shifted to higher-paying occupations. Generally, there have been a significant proportion of female labourers in multiple job sectors regardless of type of industry or occupation.

10.3 Implications of the Study

The results of this study show that education variables significantly and positively affect earnings. The estimated coefficients reveal that the effect of education on earnings increases as educational level increases for both males and females. Therefore, these findings emphasize the benefits of investing in education. Several prominent policy implications from this research include maintaining educational autonomy and improving the educational system.

Indonesia is undeniably a large country. The education management system had been directed through a centralistic government approach. In 1999, however, educational autonomy was imposed; this system allows each region to independently manage its educational system under district council supervision. Therefore, maintaining this autonomy is highly regarded as a means of improving the administrative and financial efficiency of regional education. Expanding education by increasing the number of educational institutions would also increase school access and the availability of formal institutions across regions and in remote areas. This would give every citizen equal opportunity and the right to an education.

Since the education variable has a strong impact on earnings level, this study also advises prioritization of access to higher education. The empirical results of the research suggest that the university graduate labour force gains a higher income than workers who do not obtain tertiary education. However, this is not to imply that the government should

pay less attention to lower levels of education. Upper secondary education is also a profitable investment and should therefore be pursued alongside tertiary education in a program of balanced human resources development. This policy implication is in line with government plans to impose twelve years' compulsory education, which will be launched in the 2013 educational curriculum. It is expected that, by 2020, all Indonesian citizens will have an equal opportunity to obtain high school education (Damarjati, 2014).

Finally, with regard to the earnings gap and gender, the discrimination tends to increase over the study period. However, this gap has narrowed over time. The level of education and working experience are important factors in closing the gender earnings gap. This study strongly suggests that efforts be made to maintain and improve women's educational attainments.

10.4 Limitations of the Study

There are numerous of limitation to this study. The first limitation relates to the use of cross-sectional data. Although the study design fits the purpose of this research, survey-based data collection has several pitfalls. The main disadvantages include the risk of low response rate, researcher bias in constructing the concept, data from scales being affected by response sets, and tendency for same-source bias (Bryman, 2011).

The survey construct has failed to include some other human capital-related variables. For example, if elements of the quality of the educational curriculum in the relevant schools and the availability of job training for students were added, these would enhance the rigour of the quality of educational assessment. Furthermore, this would enable better study reflection on educational competency in the Indonesian labour market.

A further limitation of this study is related to the sample. The sample data obtained for each decade varied between male and female labourers. The unequal proportions of

urban and rural sampling may make it more difficult to generalize from these data. As a result, caution should be exercised when assessing the statistical analysis, and future research might tackle this limitation.

Another noteworthy downside of the survey material applied in the study is related to the labour force assessment tool used in 1989. The survey did not include the variables of occupation, marital status and school participation rate, which limited the detailed description of the labour force during that period of time.

While recognition is given to labour force work experience, unfortunately some important data, such as the number of years out of the labour force and the actual number of years of work since leaving school, are not available for this study. The omission of these data may produce a less accurate estimation of job experience. In addition, the application of the Mincer type of determinant for labour market experience is imperfect. In this estimation, one's job experience was determined by subtracting years of schooling plus six from one's age. Although the determinant is commonly applied in labour economics research, the calculation for experience may have been over-counted since we do not include periods of non-employment.

10.5 Recommendations for Future Research

Despite the identified limitations of the study, there are several possible ways of enhancing the robustness of the research. Recommendations for future study on the gender earnings differential and discrimination in the Indonesian labour market include, but are not limited to, the expansion of the methodological analysis and examined variables.

This research has applied decomposition methods which are frequently chosen to assess labour force data. The results displayed are limited to brief but detailed descriptions

of the labour market returns to education both nationally and regionally. The research, however, would have been more informative with the use of direct cost analysis methods. This method enables researchers to assess cost estimation for each level of educational attainment. The results gained from cost analysis would further assist government policy and implementation in educational investment.

Further research on the social benefits of schooling is required in developing countries. Thus, future studies may consider applying quasi-experimental designs to conduct in-depth investigations into the impact of returns to education. Such research can be conducted to construct programs that will promote more educational investment and improve its future financial mechanisms.

Given that this study has mainly focused on the returns to educational output, increasing the number of outcome measures is recommended. For example, future research may address returns to education according to type of occupation. By acknowledging additional variables that affect the returns to education, future research will not only widen the scope for investment but will also add to the vigour of evidence-based policy which can reduce gender earnings discrimination in the country.

Last but not least is the recommendation to include variables of social perception in research. This should be considered in future investigations to determine the existence of gender discrimination in the workplace. Although Indonesia is moving toward women's empowerment and modernization, some individuals may still believe that women should not progress that far. Considering women's caring nature, cultural or religious pressure or even regulations may limit their contribution to the job market. Therefore, such views require further assessment so that potential social, economic and cultural variables can be researched in order to expand women's role in the nation's economic development.

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APPENDICES

Appendix 1: Questionnaire Sakernas 1989

REPUBLIC OF INDONESIA
CENTRAL BUREAU OF STATISTICS

1989 NATIONAL LABOUR FORCE SURVEY

HOUSEHOLD MEMBER CHARACTERISTICS

Quarterly:
Rotation Group:
Rotation to:

Confidential

I. IDENTIFICATION			
1	Province		6
2	Regency/Municipality *)		8
3	District		
4	Village/'Kelurahan'		
5	Area	1. Urban 2. Rural	10
6	Enumeration Area Number		
7	Census Block Number		
8	SAKERNA Sample Code Number		11
9	Sample Serial Number (RT)		14
10	Household Serial Number LI/L.1 *)		16
11	Number of household member		19
12	Number of Household member Aged 10 years and above		21

II. ENUMERATING CHARACTERISTICS					
1	Name of Enumerator		5	Date of Supervision	
2	Date of enumeration		6	Signature of Supervisor	
3	Signature of enumerator		7	Name of Informant	
4	Name of Supervisor				

*) Cross out inapplicable category

HOUSEHOLD MEMBERS					
III. HOUSEHOLD MEMBERS LISTING *)					
Serial number	Name of household member	Relation to the head of household	Sex (code)	Age (Year)	Mark **) Sign (√)
(1)	(2)	(3)	(4)	(5)	(6)
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					

*) After recorded all the household members, asking once again whether any other names not recorded such as new born baby, household members who was going away temporally and the maid who stayed in the house. If any, put their name on the list

**) Mark sign (√) is for household member aged 10 years and above

CODE OF Q.9 BLOCK IV

01. Agriculture of food plants
02. Other agriculture
03. Husbandry and Fishery
04. Forestry and Hunting/catching of wild animal, Agriculture service and Husbandry service
05. Mining and quarrying
06. Food, Beverages, and Tobacco Industry
07. Textile, Ready-made clothes, and Leather Industry
08. Wood and wood product Industry including household furniture
09. Other Industry
10. Electricity, Gas, and Water
11. Construction
12. Large Trading, Retail and Restaurant, Hotel
13. Transportation, Storage, and Communication
14. Finance, Insurance, Business rental of building, land and company service
15. Country Administration
16. Social and community services (Private)
17. Other services
00. Unclear activity

Code of column (4):

Male -1
Female -2

IV. HOUSEHOLD MEMBER AGED 10 YEARS AND ABOVE CHARACTERISTICS

Name : Serial number: 26

1. Sex: 28
   1. Male 2. Female
2. Age: ……year 29
3. Highest education completed 31
   1. No/never been in school
   2. Not finished Primary school Yet
   3. Primary school
   4. Junior high School
   5. Vocational Junior School
   6. Senior high school
   7. Vocational high school
   8. Diploma I/II
   9. Academy/Diploma III
   0. University
4. What kind activity you did on previous week? 32
   1. Working → go to Q.8
   2. School
   3. House keeper
   4. Cannot afford to do activity
   5. Others
5. Did you worked at least one hour during previous week? 33
   1. Yes →go to Q 8 2. No
6. Did you have a job/business but temporary not working during previous week? 34
   1. Yes →go to Q 8 2. No
7. Have you ever worked before? 35
   1. Yes →go to Q 13 2. No
8. Total working hours of total daily worked during previous week

Days							
1	2	3	4	5	6	7	Total
							hours

   36
   37
9. Type of activity/business field/company / office of main work (write down completely) 39
   ……
   ……
   ……

10. Main work status
    1. Self-employed
    2. Self-employed with assisted by family worker/
    3. Joint with permanent worker
    4. Workers
    5. Family worker
11. If Q.10 coded 4: average net wage/ salary of workers/employee received during previous a week/month:
    1. During previous week Rp. .....
    2. During previous month Rp.....
12. Total hours of main work of daily worked during previous week

Days							
1	2	3	4	5	6	7	Total hours

13. Did you seeking job during previous week?
    1. Yes 2. No
    go to Q.15
14. Do you want take a job?
    1. Yes 2. No
    finished
15. An efforts did in order to seek the job:
    1. Register to labour market
    2. Contact the company/offices
    4. other
16. . How long did you seeking a job?
    .....month
17. The job seeking for;
    1. Full time
    2. Part time

FILLING IN GUIDANCE

A. Filling in the list

1. Circle the code
   Circle the code appropriately
   Example: False
   True

2. Writing hand
   The hand writing should be clear and easy to read
   Example: False
   True

3. Digit
   Digit should be clear and easy to red
   Example: False
   True

B. How to fill in the list:

1. First, enumerator should fill in on Block I and Block II appropriating mentioned on Selected Household List (HH List) except for some information which need to have interview
2. Interview start from Block III and continue to Block IV (specific for household member aged 10 years and above)
3. Enumerator should check the relationship between one answer to another. If the relation looks 'weird', enumerators should re-questioning to the respondent and make it right.

N O T E

Appendix 2: Questionnaire Sakernas 1999

1999 NATIONAL LABOUR FORCE SURVEY

HOUSEHOLD LISTING

Confidential

I. LOCATION IDENTIFICATION		
1	Province	
2	District/Municipality *)	
3	Sub-District	
4	Village/Village Unit*)	
5	Classification of Village/Village Unit	Urban -1 Rural -
6	Enumeration Area Number	
7	Segment Group Number	
8	Segment number	
9	SAKERNAS Sample code Number	
10	Sample Household Serial Number	
11	Name of Household Head	
12	Total Number of Household Members	
13	Total Number of Household Members Aged 10 Years and Older	

II. ENUMERATION PARTICULARS			
1	Name and NIP/NMS of enumerator	4	Name and NIP/NMS of Supervisor
2	Date of enumeration	5	Date of supervision
3	Signature	6	Signature

*) cross out inapplicable category

III. HOUSEHOLD MEMBERS LISTING *)						
Serial number	Name of household members	Relation with the head of household *(code)*	Gender: *Male 1 Female 2*	Age *(year)*	Only for household members aged 10 years and older	
					Marital status *(code)*	School Attendance *(code)*
(1)	(2)	(3)	(4)	(5)	(6)	(7)
01						
02						
03						
04						
05						
06						
07						
08						
09						
10						
11						
12						
13						
14						
15						

Column (3) Codes
Relation with the head of household

Head of household	-1	Parent/In-law	-6
Wife/husband	-2	Other relative	-7
Children	-3	Servant	-8
Son/daughter in-law	-4	Other	-9
Grandchildren	-5		

Column (6) Codes
Marital Status

Single	-1
Married	-2
Divorced	-3
Widowed	-4

Column (7) Codes
School Attendance

Never/Not in school	-1
Attending school	-2
No longer in school	-3

*) After listing all the household members, please ask once more whether there are persons who have not been listed above, such as new born babies, household members who are temporarily away and servants who live in the household. If there are any, add their names to the list.

IV. CHARACTEIRSTICS OF INDIVIDUAL HOUSEHOLD MEMBERS AGED 10 YEARS AND OLDER

Name: H.H members no.:

A. Education

1. The highest education completed

No/not yet in school	1→ Skip to Q.2.a	
Not/not yet completed Primary school	2	
Primary school	3	
Junior high school	4	
Vocational Junior high school	5	
Senior high school	6	
Vocational senior high school	7	b. Field ...
Diploma I, II	8	
Academy/Dipl. III	9	
Univ./Diploma IV	0	Filled by CBS

c. Educational organization:

Government	1	Studied
Private	2	

B. ACTIVITIES THE PREVIOUS WEEK

2a. Did you engage in any of the activities below during the previous week?

	Yes	No
1. Worked *)	1	2
2. Attended school	1	2
3. Housekeeping	1	2
4. Other	1	2

b. If you had answered "Yes" above, which activities took up the most time during the previous week?

1 →(got to Q.5) 2 3 4 5

3. Did you work *) at least 1 hour during previous week?

Yes 1 (go to Q.5) No 2

4. Did you have a job/business, but temporarily did not work *) during the previous week? Yes 1 No 2 (go to Q.13)

5 Total hours worked daily from all jobs, during the previous week

Mon	Tue	Wed	Thurs	Fri	Sat	Sun	total

C. PRIMARY WORK ACTIVITY

6. Type of industry/line of business at the work place/company/office of your primary activity/job during the previous week:

Filled by CBS

(Specify)

7. Type of work/position at your primary activity/job during the previous week

Filled by CBS

(Specify)

8. Total hours worked at primary activity/job during the previous week: .....hours

9. Employment status of primary activity/job during previous week:

Self-employed	1	
Self-employed assisted by / temporary or /unpaid workers	2	Q.11
Self-employed assisted by / permanent workers	3	
Paid worker/employee	4	
Unpaid worker	5 →Q 11	

12. a. What is the average net monthly income that you receive from your primary activity/job:

Wage/salary in cash: Rp .....

Wage/salary in-kind: Rp. .....

*) The definition of "work" is to engage in an activity for at least one continuous hour in order to earn/help earns an income.

1 0.b. Current situation compares to a year ago:

Characteristic	Better	Good	Bad	Worse	Don't know
1. Income	4	3	2	1	
2. Work place facilities	4	3	2	1	0
3. Medical benefits	4	3	2	1	0
4. Work safety facilities	4	3	2	1	0
5. Transportation facilities	4	3	2	1	0
6. The situation as a whole	4	3	2	1	0

D. ADDITIONAL WORK

11. Did you have an additional job during the previous week?
Yes 1 No 2 (skip to Q.13)

12. Type of industry/line of business of your main additional job:
Filled in (Specify)by CBS

E. JOB SEEKING ACTIVITIES

13. Are you looking for a job?
Yes 1 No 2 → skip to Q.18

14. Main reason you are looking for a job:
Completed school/no longer in school 1
To help household economy/family
Economic responsibility 3
Additional income 4
Current job is not appropriate
Lay off/company closed 6
Other (specify .....) 7

15. What kind of efforts did you make to look for a job?
Register with Job Opportunity Mart 1
Contacted companies/offices 2
Applied for an advertised job 4
Contact relatives 8
Other 16

16. How long have you been looking for a job:
..... month

17. What type of job are you looking for: Full time 1
Part time 2 go to Q. 20

1 8. Main reason you are not seeking a job:
Satisfied with current job/no need 1
Futile 2
Attending schooling
Housekeeping 4 Q 20
Not able to work 5
Other 6

19. If there is a job offer, would you still want to accept it?
Yes 1 No 2

F. WORK EXPERIENCE

20. Have you ever worked*) before?
Yes 1 No 2 → STOP

21.If "yes", did you stop work*) after July 1997? Yes 1 No 2 → STOP

22. Why did you stop work *)/ move work after July 1997:
Income not satisfactory -1
Work environment not agreeable -2
Laid off -4
No demand/business closed -8
Other (.....) -16

23. What was the type of industry/line of business of your work before you stopped/moved work?:
Filled in by CBS
(Specify)

24. Employment status before you stopped work*/moved work*
Self-employed 1
Self-employed assisted by temporary or / unpaid workers 2
Self-employed assisted by permanent workers 3
Paid worker/employee 4
Unpaid worker 5

*) The definition of "work" is to engage in an activity for at least one continuous hour in order to earn/help earns an income.

Appendix 3: Questionnaire Sakernas 2009

SAK09-AK
One set for
BPS Regency

THE NATIONAL LABOR FORCE SURVEY 2009
INFORMATION OF HOUSEHOLD MEMBERS

CONFIDENTIAL

0	8	0	9

I. LOCATION IDENTIFICATION			
1	PROVINCE		
2	REGENCY/MUNICIPALITY *)		
3	SUB-REGENCY		
4	VILLAGE/POLITICAL DISTRICT ADMINISTERED BY LURAH *)		
5	VILLAGE CATEGORY	URBAN - 1 RURAL - 2	
6	A. CENCUS BLOCK CODE		
	B. SUB-CENCUS BLOCK CODE		
7	SERIAL NUMBER OF SAMPLED SAKERNAS		
8	SERIAL NUMBER OF SAMPLE HOUSEHOLD		
9	NAME OF HOUSEHOLD HEAD		

II. SUMMARY			
1	NUMBER OF HOUSEHOLD MEMBERS		
2	NUMBER OF HOUSEHOLD MEMBERS AGED 10 YEARS AND OVER		

III. INFORMATION OF FIELD WORKER			
1	ENUMERATOR CODE:		
2	NAME OF ENUMERATOR:	DATE OF ENUMERATION:	SIGNATURE: .....
3	NAME OF TEAM COORDINATOR :	DATE OF SUPERVISION :	SIGNATURE: .....

**) Please, crossed it out the inapplicable one*

IV. LIST OF HOUSEHOLD MEMBERS

Number	Name of Household Members	Relationship to Head of Household (Code)	Sex Male 1 Female 2	Age (Years)	Only for Those Aged 10 Years and Over	
					Marital Status (Code)	School Participation (Code)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
01		1				
02						
03						
04						
05						
06						
07						
08						
09						
10						
11						
12						
13						
14						
15						

Codes for Column (3) — **Relation to Head of Household**
1. Household Head
2. Wife or husband
3. Son or daughter
4. Son/Daughter in-Law
5. Grandchild
6. Father/ mother in-Law
7. Others Relative
8. Housemaid

Codes for Column (6) — **Marital Status**
1. Single
2. Married
3. Divorced
4. Widowed

Codes for Column (7) — **School Participation**
1. No Schooling
2. In School
3. Drop out

1. After recording all of the household members in column (2) and column (3), please confirm its ones again whether anyone such as: housemaid(s), driver, gardener, baby sitter and others on the same context, whom living in that household. If you found them, please add those names on the list.
2. Please confirm by asking whether anyone name was missed out. As an example: new born babies, and members of household who have been away for less than 6 months. If you found them, please add those names on the list.
3. Mean while, if there is a household member who is leaving for less than 6 months but intended to move or would leaving home for 6 months and more is not counted as a household member, take he/she out from the list.
4. Finally, reordering the serial number in column (1)

V. CHARACTEIRSTICS OF INDIVIDUAL HOUSEHOLD MEMBERS AGED 10 YEARS AND

Name: Serial no.:

V.A. Education

1. a. The highest education completed

No/not yet in school	1→ Skip to Q1d	
Not/not yet completed	2	
Primary school		
Primary school	3	
Junior high school	4	
Vocational Junior high school	5	
Senior high school	6	
Vocational senior	7	b. Field of Study high school ----------
Diploma I, II	8	
Academy/Dipl. III	9	
Univ./Diploma IV	10	Filled by Team Coordinator
Master./PhD	11	

c. Year of graduation.....

d. Have ever had training/course and got certificate?
Yes 1 No 2

e. If 'Yes', please stated the two main training courses based on priority use:

1. ..... 2. .....

V.B. ACTIVITIES THE PREVIOUS WEEK

2.a. Did you engage in any of the activities below during the previous week?

	Yes	No
5. Worked	1	2
6. Attended school	1	2
7. Housekeeping	1	2
8. Other	1	2

If Q2.a1 through Q2.a.4=2 go to Q3

b. If you had answered "Yes" above, which activities took up the most time during the previous week?

1 →(got to Q.4) 2 3 4 5

5. Did you have a job but temporary not working during previous week?
Yes 1 No 2

6. Are you looking for a job?
Yes 1 No 2

7. Have you established a new business/firm during previous week?
Yes 1 No 2

6. Total hours worked daily from all jobs, during the previous week

Mon	Tue	Wed	Thurs	Fri	Sat	Sun	total

V.C. MAIN INDUSTRY

7. Type of industry/line of business at the work place/company/office of your primary activity/job during the previous week:

.....Filled in by Team

(Specify)

8. What is main your occupation during the previous week

.....Filled in by Team

(Specify)

9. Total hours worked at primary activity/job during the previous week: .....hours

10.a. Employment status of primary activity/job during previous week

Own account worker	1	Q11.a
Employer assisted by / temporary or / unpaid workers	2	Q13
Employer assisted by permanent Employee	4	Q12
Casual employee in agriculture	5	
Casual employee not in agriculture	6	
Unpaid workers	7	Q14.a

11. a. How much did you get an income a month ago of main job?

Rp.....

b. Number of day (s) was/were needed in

(If Q10.a = 1 → Q13 or if Q10.a = 5 or 6

12. How much do you usually earn salary/ wage of main job per month?
a. Wage/salary in cash: Rp .....
b. Wage/salary in-kind: Rp. .....

13. How long have you been working?
.....Year(s), ...Month(s)

14.a. Where is your job's location during the previous week?

Province

Regency/Municipality

b. If the job's location is outside regency of residents area, do you commute every day/week/month?

every day 1 every week 2 every month 3

c. How far is from home to the location of work?

……..km

d. How long the trip from home to the location of work?

≤ 30 minutes 1 61-120 minutes 3

31-60 minutes 2 > 120 minutes 4

e. What kind of transportation using to go and back from location of work?

common transportation 1

collective transportation 2

personal transportation 3

without using transportation 4

15.a. When did you start working?

August 31, 2008 and before 1 Q16

September 1, 2008 or over 2

monthyears

b. How long have you been looking for a job/ establish a new business/firm?

…… month(s)

V.D. ADDITIONAL JOB

16. Did you have an additional job during the previous week?

Yes 1 No 2 → sub block V.E

17. What is your type of industry of main additional job?

……

……

V.E. LOOKING FOR A JOB ACTIVITY / ESTABLISHED BUSINESS/FIRM

Q18 to Q21 asked if Q4 = 1 or Q5 = 1

18. What is main reason you looking for a job/ establish business/firm:

completed/Not attend school anymore 1

Responsible for making a living/ supporting household financing 2

Additional income 3

Current job unsuitable 4

Lay off 5

Business collapse 6

Others (……) 7

19. What efforts have been done to find a new job/ establish business/firm:

1. Registering at the job market 1

2. Applying directly to establishment/office 2

3. Applying through advertisement 3

4. Contact through relatives/friends 4

5. Obtaining capital/equipment 5

20. How long have you been looking for a job/ establish a new business/firm?

…… Year(s) ……. month(s)

21. What type of job has been looking for ?

Full time job 1→Q24

Part time job 2

22. The main reason of not looking for job

Discourage	1	
Have a job but has not started	2	
Attending school	3	
Housekeeping	4	
Already have a job	5	
Sufficient income	6	→Q24
Unable to do work	7	
Others (.....)	8	

23. If offered a job, would you accept it?

Yes 1 No 2 →Q24

24. Did you ever work before?

Yes 1 No 2 →stop

25. Did you stop working or move into another job after August 31, 2008?

Yes 1 No 2 →stop

26. The main reason of stop working move into another job after August 31, 2008?

Lay off	1
Business collapse	2
Insufficient income	3
Unsuitable on working environment	4
Work contract have finished	5
Others (.....)	6

27. Previous job main industry before you stop working/move out into another job?

.....

.....

28. Employment status of the previous job before you stop or move into a new one?

Own account worker	1
Employer assisted by temporary workers/ unpaid worker	2
Employer assisted by permanent workers	3
Employee	4
Casual employee in agriculture	5
Casual employee not in agriculture	6
Unpaid workers	7